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See page 42

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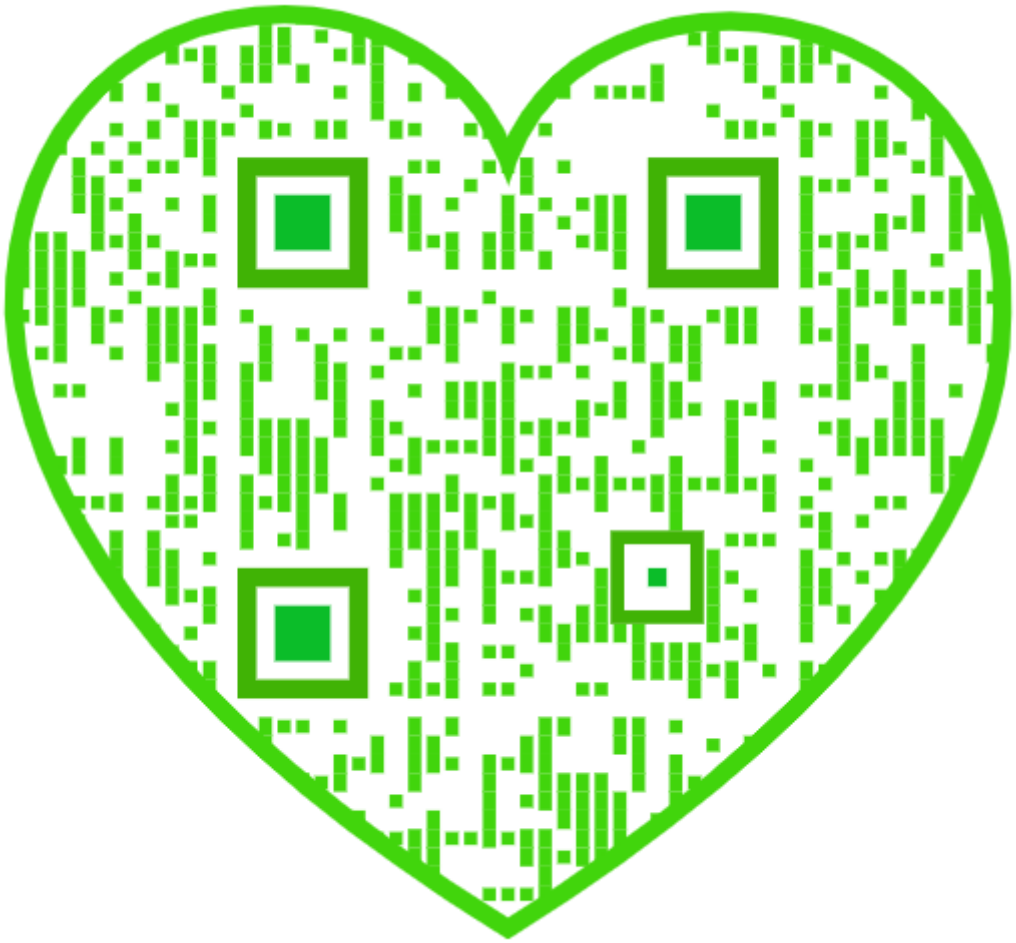

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Most readers, when we question them about what they think of our tool-evaluation articles, give us high marks. They appreciate the fact that several of our staff members, together with freelance technical consultants, really put the tools through their paces. Then, after our hearty band of product testers finish their work, they report what they've discovered in a clear, unbiased way. And most of all, our readers like our in-depth comparison charts.

One thing you might not have noticed is that for the past couple of years we have included two *overall-rating* columns in our tool-comparison charts—*"performance"* and *"value."* Doing this allows us to fairly compare higher-priced tools with lower-priced models. At the same time, these ratings help you get the best tool value for the money you spend.

We think these ratings are so important in helping you make wise tool- and product-buying decisions that beginning with this issue we've decided to use them in our *"Products That Perform"* and *"Tool-Buyer's Update"* columns as well. Along with every tool or product we feature in these columns, you'll see a Product Scorecard like the one *above*.

Tom Jackson, our general-interest editor and the person who will be coordinating the ratings, told me, "For a product to get in *WOOD®* magazine, it will have to earn at least three stars. There are lots of two-star products out there, but they're not worth our readers' time." Tom continues, "Five stars will be rare. A product will have to outperform everything else in its category or offer incredible value for the price to get a five-star rating."

With our new rating system in place, we think we have all our product-evaluation bases covered. But if you've got some other ideas on how we can serve you even better in this area, please drop me a line.

Larry Clayton

Print this article

Better Homes and Gardens®
WOOD®
THE WORLD'S LEADING WOODWORKING MAGAZINE
ISSUE NO. 81 SEPTEMBER 1995

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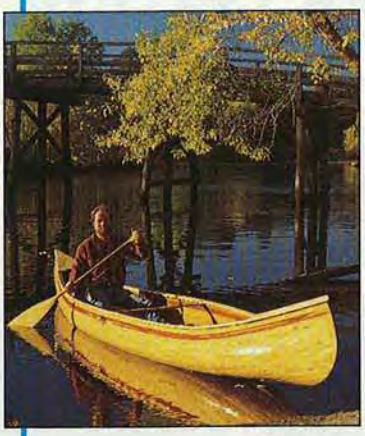
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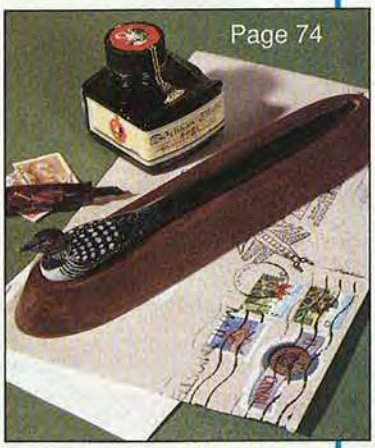
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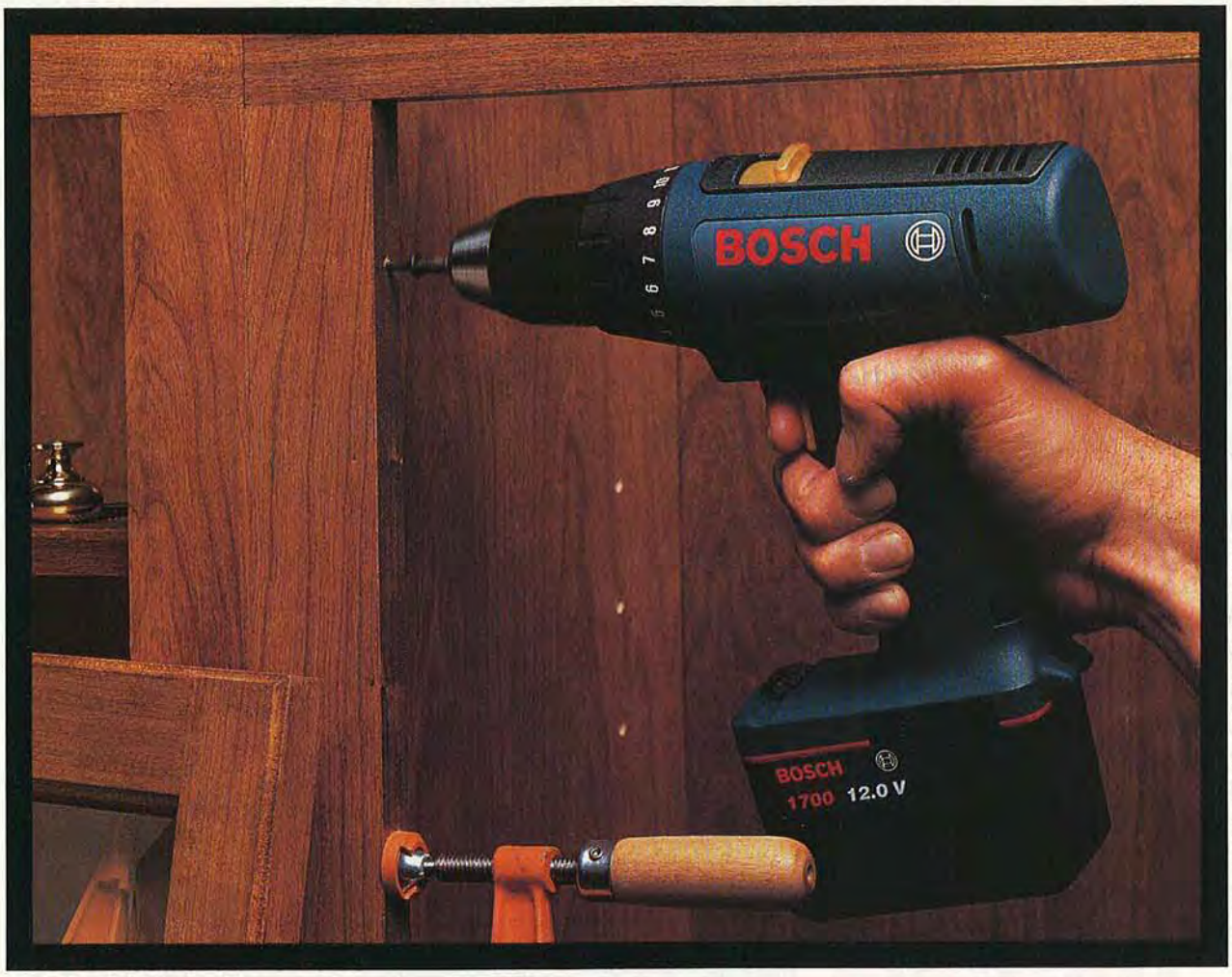
This issue's cover wood grain: cherry



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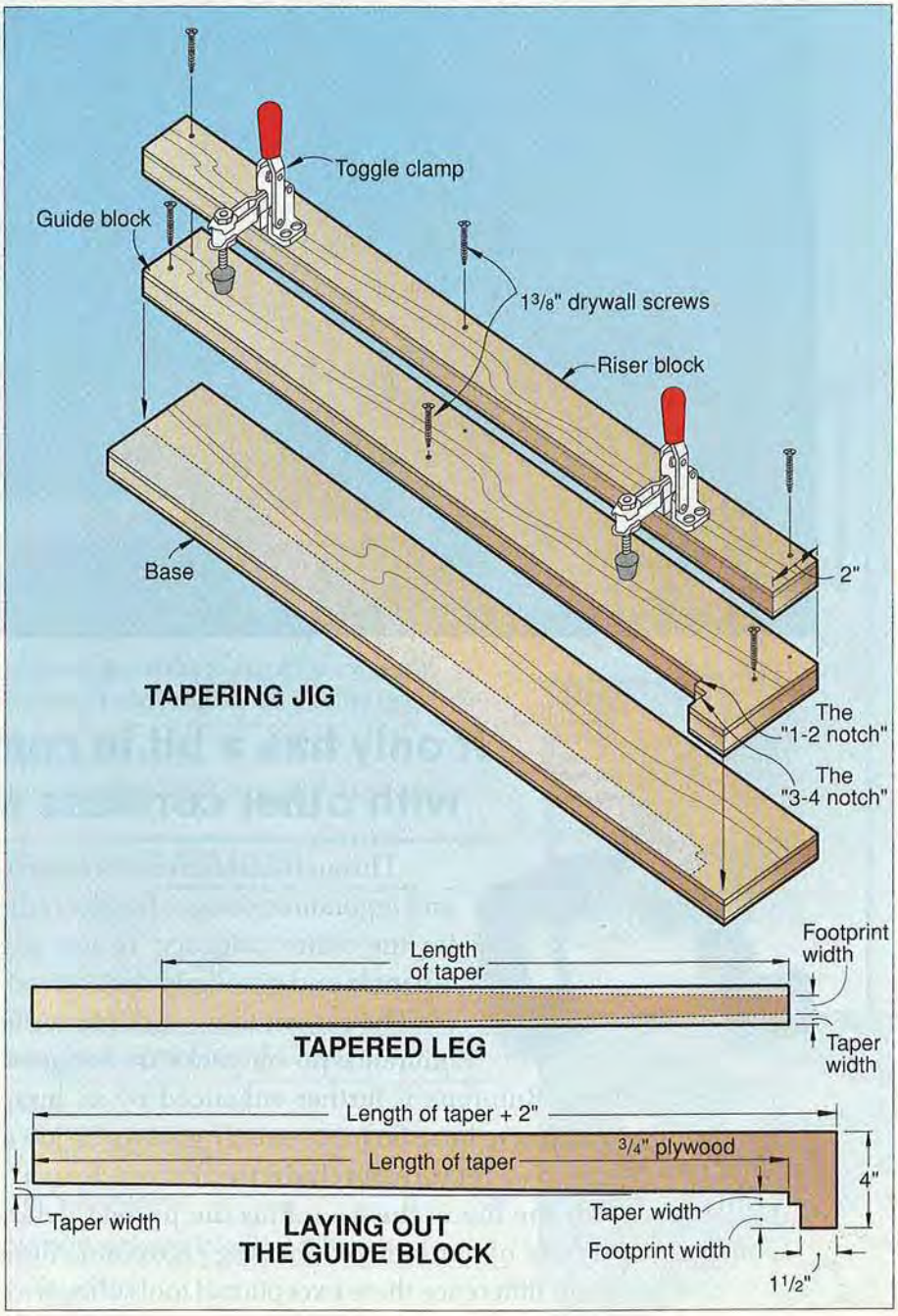
Develop Your Shop Skills

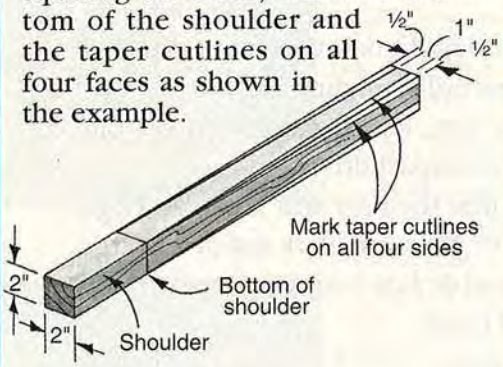
TAPERED LEGS

with your tablesaw or jointer

Tapered legs add a graceful touch to any furniture piece. And, you might be surprised at how easy they are to make using the steps shown here. First, we'll show you a method for tapering legs with a tool nearly all of us own—a tablesaw. Then, we'll share our preferred method that uses a jointer (the jointer has to have an infeed table that's at least as long as the leg you intend to taper).



No matter which method you use, you need to start with a piece of stock that is square along its entire length. (For tips on squaring leg stock, see the Develop Your Shop Skills article on *page 71* of the January 1992 issue of *WOOD*® magazine.) After squaring the stock, mark the bottom of the shoulder and the taper cutlines on all four faces as shown in the example.



How to cut tapered legs with your tablesaw

Start by building a tapering jig like the one shown *right* from three pieces of ¾" plywood. For safety we incorporated toggle clamps that securely hold the leg blank as you saw the taper. (You can buy toggle clamps through most woodworking-supply stores and catalogs.) As you can tell by looking at the Laying Out the Guide Block drawing, the size of your jig pieces will vary depending on the size of leg you're making. All three pieces should be the same length, and the width of the base should match the width of the guide block.

Continued on page 6

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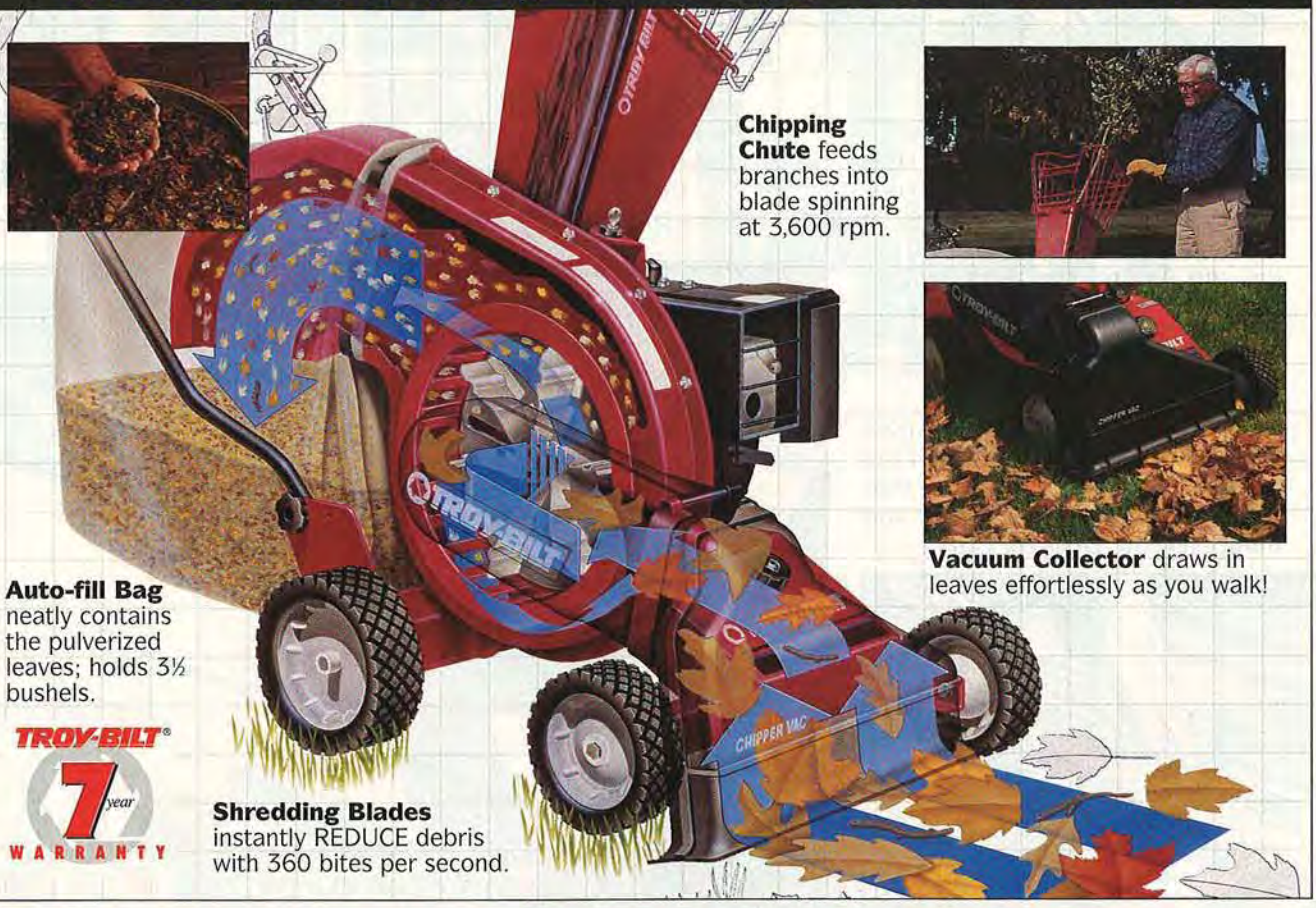

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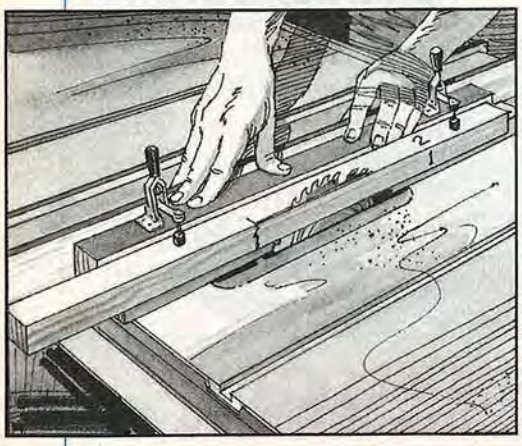
TAPERED LEGS

Continued from page 4

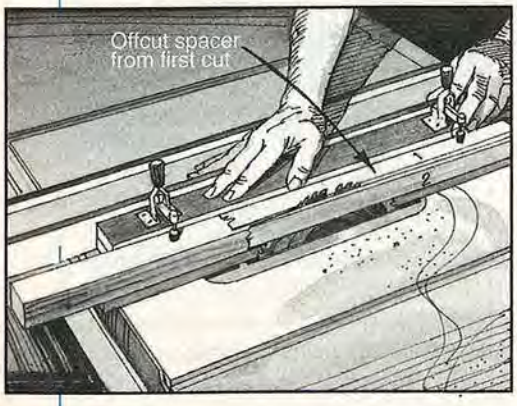
2 Set the tablesaw rip fence for a ripping cut that matches the width of your tapering jig. Place the foot end of the leg into the 1-2 notch in the jig, and secure it with the toggle clamps. (We call it the 1-2 notch because you make the first and second cuts with the foot placed in this notch.)

Turn on the tablesaw and pass the jig and workpiece through the blade as shown *below*. Note that we removed the blade guard and numbered the faces for clarity.

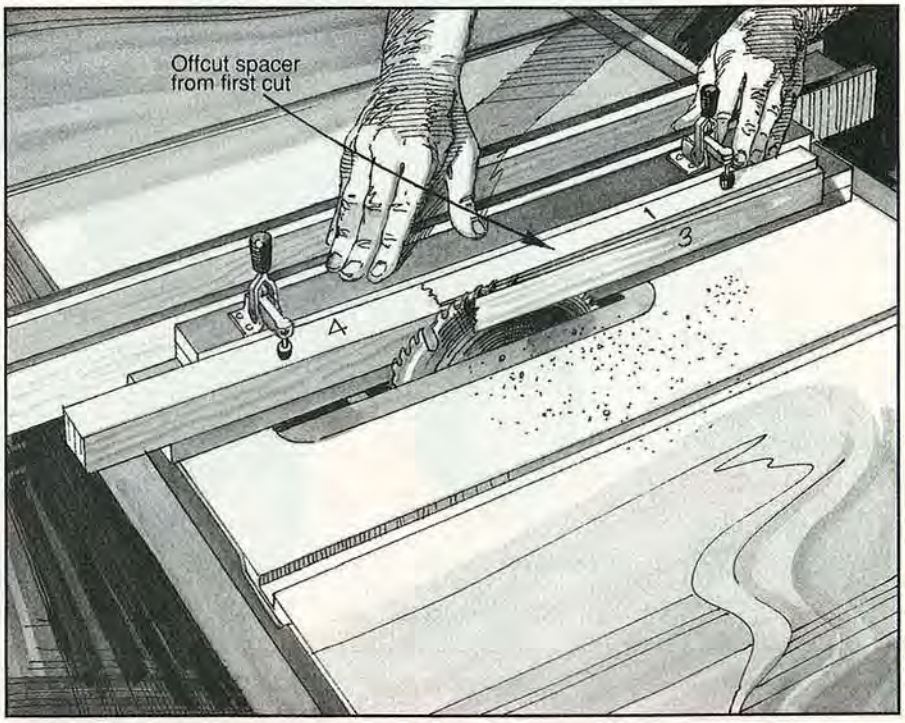


3 Now, remove the leg blank from the jig. Replace it in the 1-2 notch so that you will cut one of the faces adjoining the face you cut in Step 2.

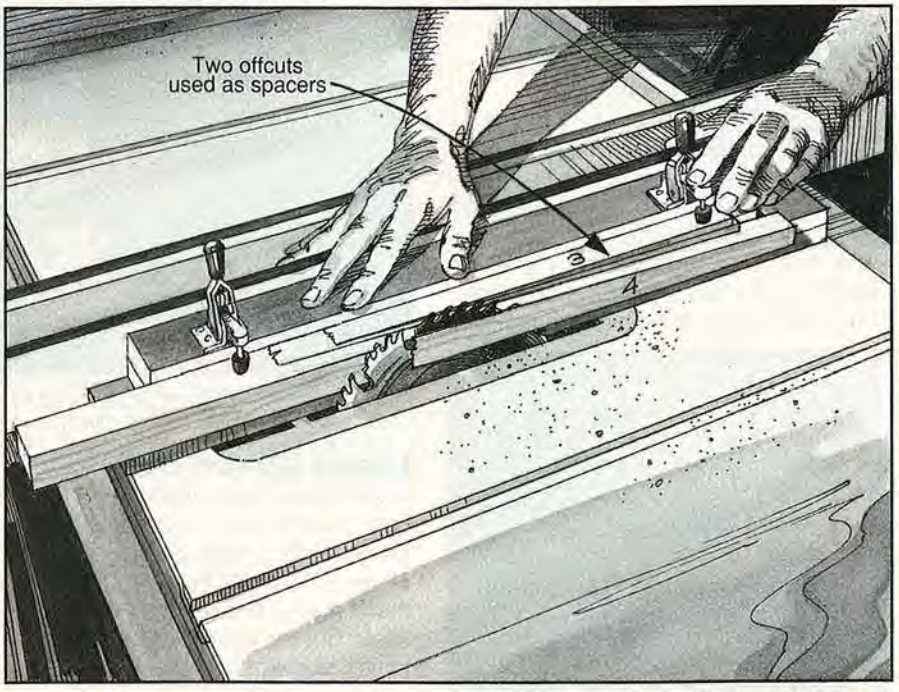
To make the toggle clamp at the foot end of the jig work, you'll need to use the offcut from Step 2 as a spacer block. Place it between the leg blank and the clamp as shown *below*.



4 Remove the leg blank and replace it in notch 3-4 to cut either of the remaining nontapered faces. Note that you need to again use the offcut from the first cut as a spacer block beneath the foot-end toggle clamp as shown *below*.



5 To cut the fourth taper, place the leg in notch 3-4 and use two offcuts under the foot-end toggle clamp. Finally, sand away the saw marks with sandpaper and a hardwood block.



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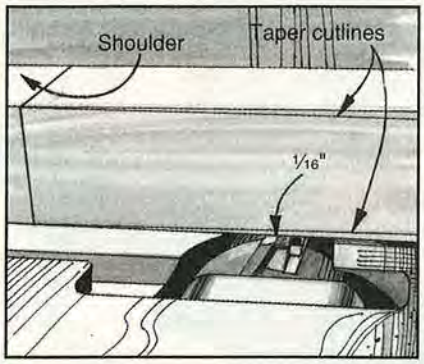
TAPERED LEGS

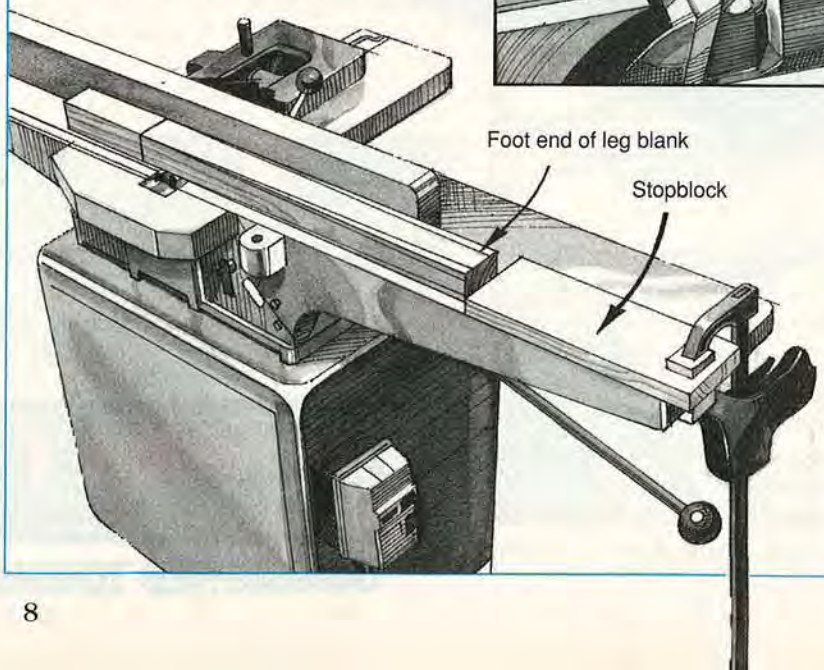
Continued from page 6

The jointer: your ticket to smooth, accurate tapers

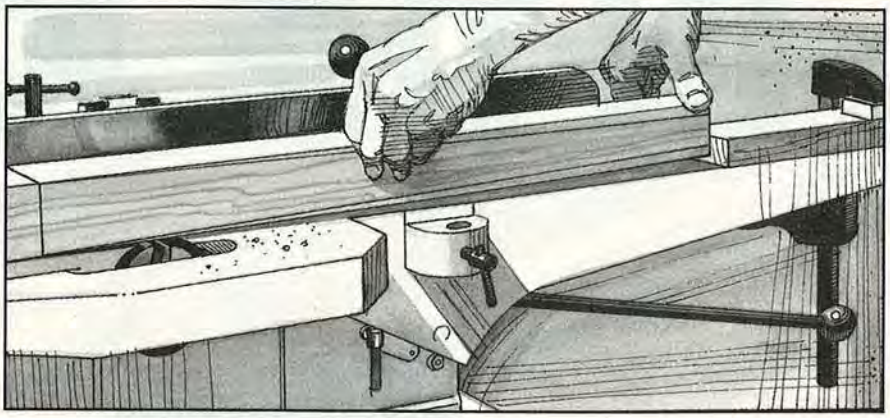
To get things started, set your jointer to remove 1/16" of material. With your jointer unplugged, carefully turn the cutterhead by hand so one of its knives is at the top of its cutting rotation. Now, mark the point along one of the taper cutlines where the material to be removed is 1/16" wide. Place the workpiece onto the jointer bed so this mark sits directly above the cutterhead knife as shown *below*.



2 With your workpiece positioned exactly as described in Step 1, place a 3/4"-thick stopblock onto the infeed table so it contacts the foot end of your leg blank. Clamp the stopblock to the infeed table as shown *below*.

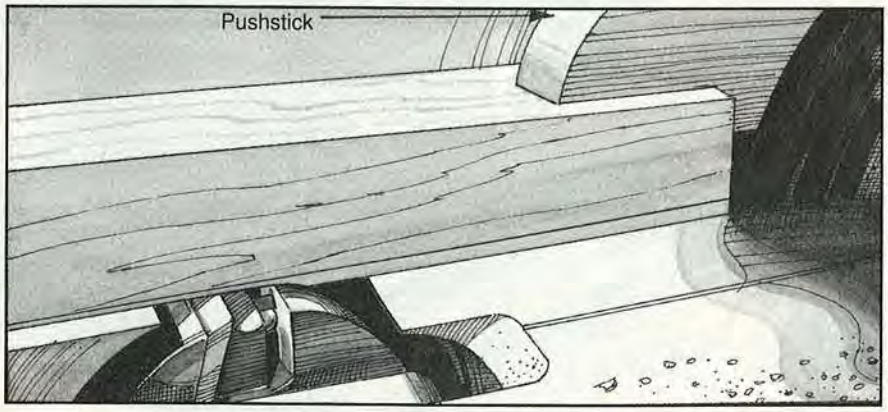


3 Lift the workpiece off the jointer bed, and turn on the jointer. Then, position the workpiece with the end of the shoulder contacting the outfeed table, and the foot raised off the table but touching the stopblock as shown *below*.

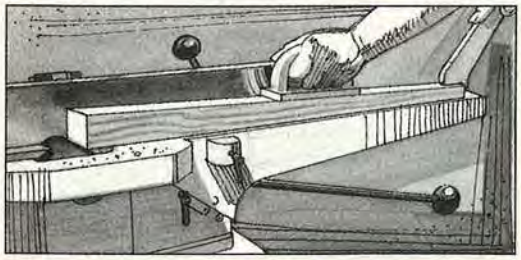


4 Lower the foot end of the leg blank onto the infeed table, and slowly feed the blank over the turning cutterhead. Before the foot end of the blank comes within 6" of the cutterhead, switch to a pushstick to complete the cutting pass. For consistent results, blow away debris from the jointer bed before each pass. Repeat this process until you cut to within 1/16" of the taper cutline along its entire length.

Repeat Steps 3 and 4 for each face of the leg blank. Remember to leave 1/16" extra material along each taper cutline.



5 Remove the stopblock, and pass each face of the leg blank over the cutterhead once. That's it! You should have a smooth, perfectly uniform taper on each face.



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Exact-I-Rip Advantage #2: Lock the fence into place–at the front and rear–with just one lever, for consistent cutting width.

Exact-I-Rip Advantage #3: Includes additional aluminum extension to help stabilize table for really large work pieces (such as 4x8 plywood sheets).

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The smooth-running 3 H.P. (Max. Developed) capacitor-start, capacitor-run induction motor packs plenty of punch at 120V or 240V to cut stock up to 3-3/8" thick! Notched belt drive and spring-loaded motor mount reduces belt slippage for faster cuts.

Exact-I-Rip Advantage #4: Get pin-point accuracy in setting up your cuts, with the micro-adjust mechanism that lets you align the fence with precision.

Exact-I-Rip Advantage #5: Set-up's a breeze, thanks to the high-tech thermoplastic polymer bearing surfaces built into the Exact-I-Rip fence system. The fence always slides smoothly and easily–so you can get right to work!

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Think all table saws are pretty much alike? Then you haven't checked out the Craftsman 10" Table Saw and Exact-I-Rip Fence Combo. Stock No. 29911. Together they cut the toughest jobs down to size – with an incredible new rip fence technology that gives you silky-smooth position changes, accurate cuts and a huge appetite for those large work pieces. In fact, the Exact-I-Rip fence is so terrific, we're offering it separately as a retro-fit option for other belt drive Craftsman table saws. Ask for accessory fence 29901.

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THE SLITTING CUTTER

Here's how cabinetmakers of yesteryear cut thin stock

Cabinetmakers have always spent much of their time sawing stock into parts. So, they have often embraced new tools or procedures that speed the cutting while preserving or increasing accuracy. Consider one operation: ripping thin stock for drawer bottoms.

Today, you simply set the tablesaw fence and feed the wood into a fine-toothed, carbide-tipped blade. The cut piece comes out uniformly wide, with a smooth, true edge. From start to end, the operation can be timed in seconds. And you can cut any number of pieces to precisely the same width.

A century ago, however, circular tablesaws were far less common. To rip thin stock back then, a craftsman had to measure and mark a cutting line on the wood before sawing it with a hand ripsaw. Aside from the tendency for the ripsaw to follow the grain instead of the line, there was the problem of cutting additional pieces the same width. Then, too, the edge often required jointing.

A fence-guided slitting cutter (also called a slitting gauge) like the one shown *above right* enabled the early cabinetmaker or joiner to work faster. Using one, he could cut thin material simply by slicing through it with the sharp blade. The fence maintained uniform width and helped keep the grain from leading the cutter off the intended path. While severing a piece of stock might take several passes, this was still quicker than marking and sawing.

Some craftsmen made their own slitting cutters, usually attaching a knife blade to a marking gauge. Commercial slitting cutters, widely available, ranged from rudimentary to elaborate.

1. With the fence in position, the Thomas Rice slitting cutter is ready to go to work. Cabinetmakers used tools like this to rip thin stock a century ago.

2. The slots in the brass foot provide cutting-depth adjustment. The round blade doesn't turn when cutting, but can be rotated easily to reveal a fresh edge.

The one shown belongs near the elaborate end of the spectrum. Nicely made of brass and rosewood, it was patented Sept. 9, 1873 by Thomas Rice, according to an inscription on the side. Thanks to the saw-type handle, a craftsman could bear down on the cutter while guiding it. Cutting depth was adjustable, and the 7¾"-long fence could be set for widths from ⅛" to 12".

The round blade (it's about 1¾" in diameter) is an unusual but practical feature. Instead of taking time to resharpen a dulled straight blade, a cabinetmaker could loosen the blade on this slitting gauge and rotate it to expose a fresh cutting edge.

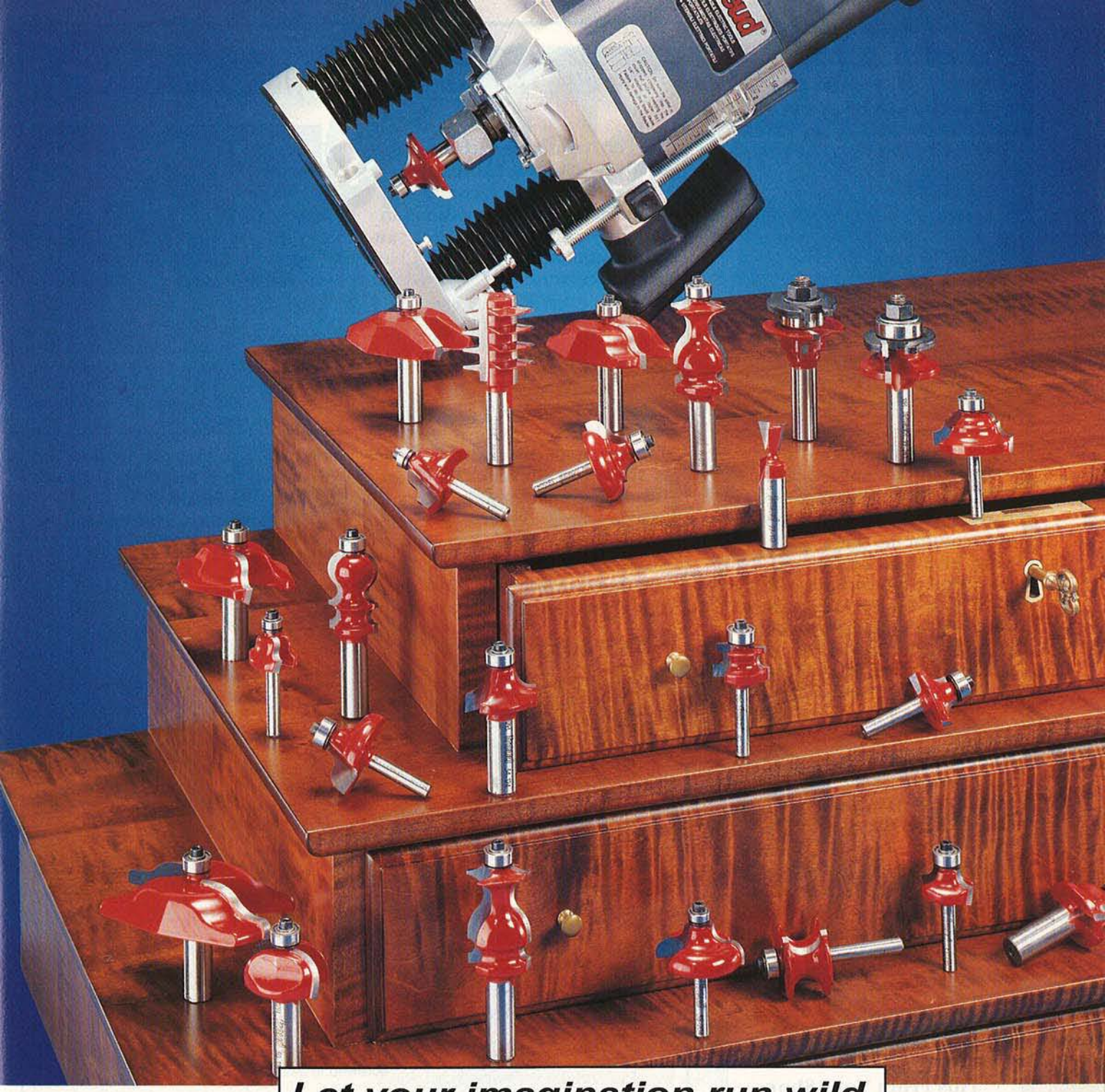
A slitting cutter came in handy for other tasks in the cabinet shop, too. The cutter could scribe a guideline on stock too thick to slice through. And the tool proved to be ideal for both ripping and crosscutting veneer.

Don't expect to find a slew of slitting cutters at old-tool sales and auctions, however. "Slitting gauges with maker marks are among the rarest of all cabinetmaker's tools," one dealer notes. When they turn up, prices vary widely—a 1994 catalog listed one at $135; the fancier one here was priced around $300 in 1993.

Similar tools are sold today for veneer cutting. And modelers often use a smaller version called a balsa stripper. But you probably won't find any modern cabinetmakers ripping with a slitting cutter; the tablesaw just does it so much better and faster.

Photographs: John Hetherington
Tool courtesy of Neill Stoll, Glenbrier Antiques, Dexter, Michigan
Written by Larry Johnston

Print this article



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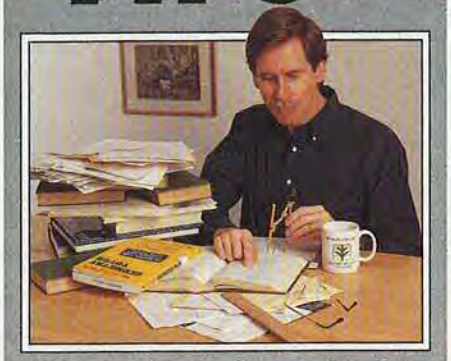

Ah, here it is, the formula for dividing a circle into segments.

When we published Vernon Raaen's shop tip on how to divide a circle in the December 1994 issue, dozens of readers wrote in to inform me that I was stepping into one of the hottest mathematical debates of all time. Jack Porter of San Diego even ran calculations which indicated the tip has an error factor of about .004" on a 10" circle. Since .004" is barely thicker than a human hair, you shouldn't have too many problems applying this formula to small wood projects!

Many of you also sent in chord charts that give formulas for dividing a circle. Unfortunately, printing these charts would take up more space than we have in Shop Tips. But we're always interested in your tips, mathematical or otherwise. If we choose your tip, we'll pay you $40, plus you get a shot at winning the top-tip tool prize. Send your entries to:

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(and Ours)
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We try to publish original shop tips, so please send your idea to only one magazine. Also note that we cannot return submissions. Thanks!

Tom Jackson
General-Interest Editor

Print this article

Cut compound miters easily with this tablesaw jig

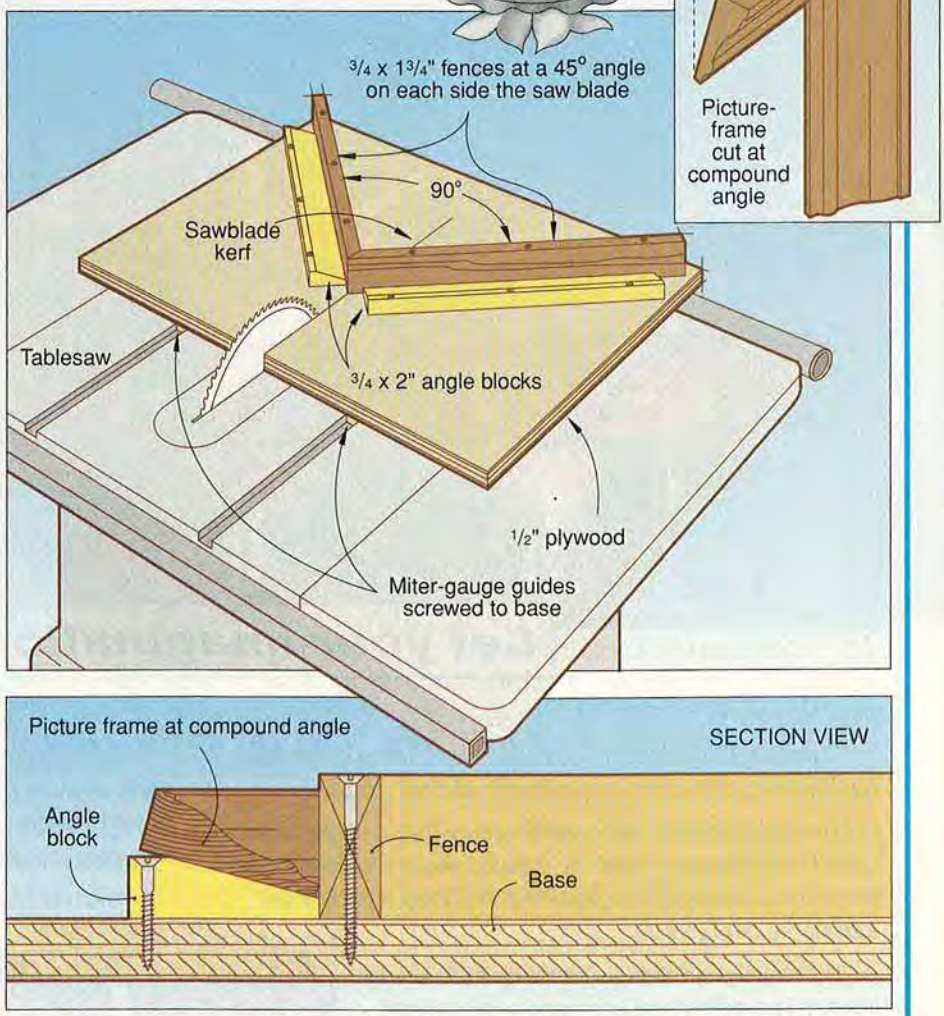
Here's a way to cut compound miter picture frames without an expensive compound miter saw. Start by making an 18×28" base from a piece of ½" plywood. Attach parallel miter-gauge guides on the bottom. Then, push this base through the sawblade to create a kerf that extends about 12" across the plywood.

Using this kerf as a centerpoint, screw the two fence pieces and the two angle blocks to the base as shown in the drawing *below*. You can bevel the angle blocks at any angle you like, but 25° works well for most picture frames. Now, clamp or hold your picture-frame moldings against the fence and cut the compound angle by pushing the jig and the picture-frame molding through the tablesaw blade.

—David Mattichak, Port Republic, Va.

For submitting the top shop tip in this issue, David Mattichak will receive a Skil model 3370 benchtop belt/disc sander.

TOP SHOP TIP



Continued on page 14

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TIPS FROM YOUR SHOP (AND OURS)

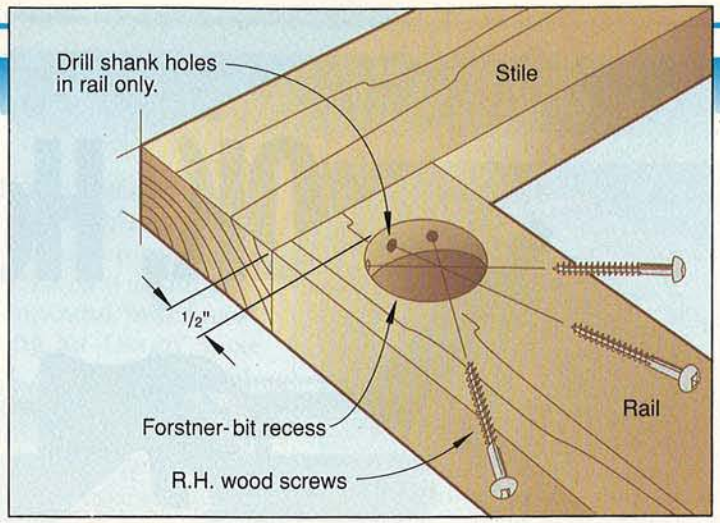
Continued from page 12

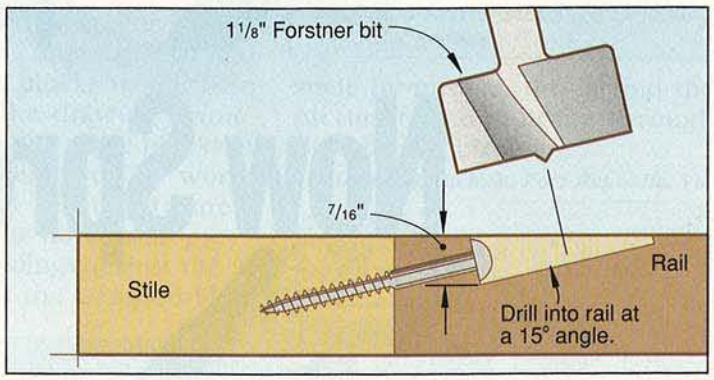
Forstner bit doubles as a pocket-hole jig

If you would like to make some pocket-hole joints on a rail-and-stile assembly, but you don't have a pocket-hole jig, try making the pocket hole with a Forstner bit. First, chuck a 1⅛" Forstner bit in your drill press and angle the table 15° from vertical. Then, bore a shallow hole in the rail, as shown in the drawing *right,* on the side of the frame that won't show. Bore the hole just deep enough to position the heads of the screws below the surface of the stile.

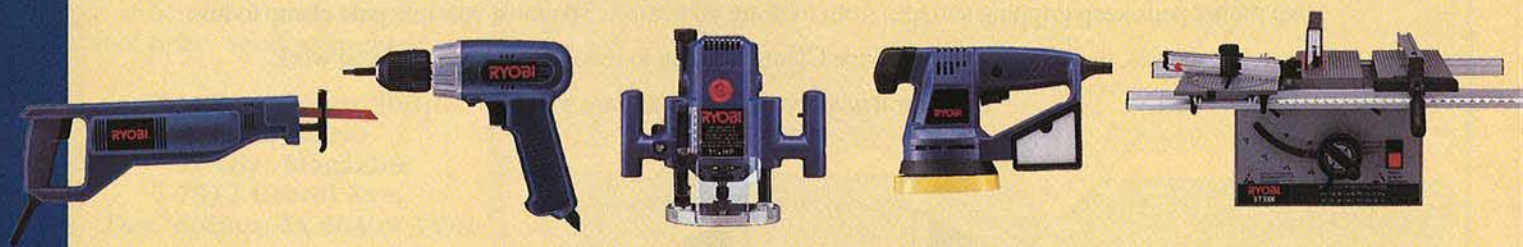
Next, drill three shank holes for the screws where shown, but don't continue the holes into the stile. Apply glue to the mating surfaces, clamp the rail and stile together, and drive three screws into the shank holes. Continue attaching the remaining rails to the stiles in this manner. After you've driven the screws tight, remove the clamps. The screws will hold the joint securely until the glue dries. For the best results, use the pocket-hole screws that you find in woodworking catalogs that sell pocket-hole jigs. These round-head screws seat tightly and help to prevent the wood from splitting.

—from the WOOD® *magazine shop*





NOW THERE'S A FINE LINE BETWEEN PR



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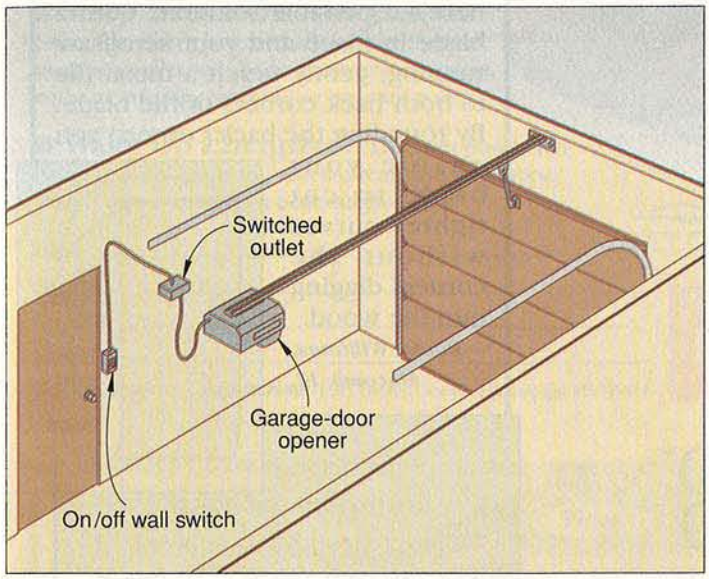
Foil would-be thieves—wire the garage door to a switch

A shop in an attached garage with an automatic garage-door opener poses a security risk if you leave the remote control in your car parked outside. All a thief has to do is to break into the car, grab the remote control, and he's as good as in your shop.

To eliminate this risk, wire your garage door opener to a wall switch as shown in the drawing *left*. When you park your car outside, just switch the door opener off before you step in from the garage. Your shop and house will remain secure, and you won't have to lug your remote control back and forth between the car and the house.

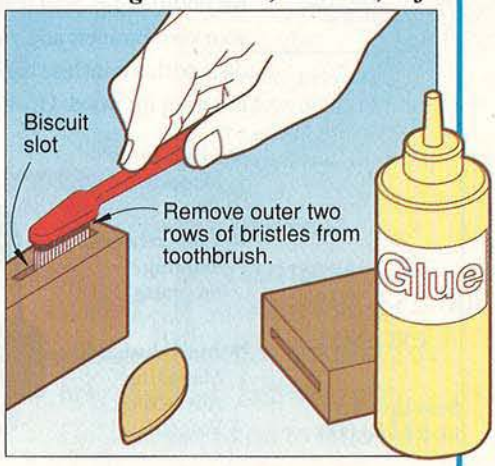
—Robert Raquet, Norristown, Pa.



Old toothbrushes make great glue applicators

When your toothbrush wears out, put it back into service as a glue applicator for biscuit joints. After you remove the two outside rows of bristles with a sharp knife, the remaining center rows will fit neatly in most biscuit slots.

—George Senmartin, Belleville, N.J.



Continued on page 16

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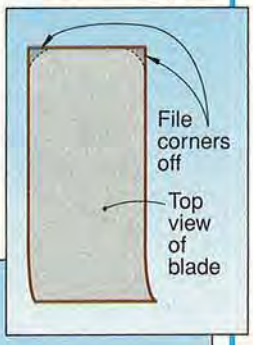
TIPS FROM YOUR SHOP (AND OURS)

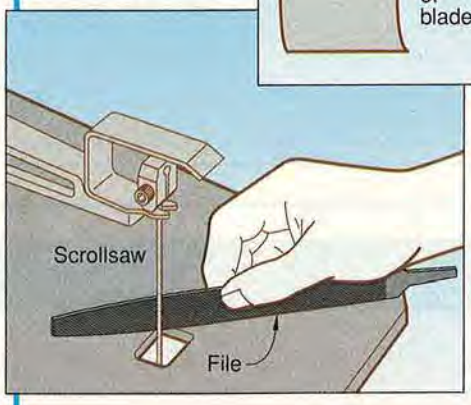
Continued from page 15

Round the back of scrollsaw blades for smoother cuts

If you've ever been surprised by rough edges or burn marks on stock that you've cut on your scrollsaw, particularly thick stock, here's a possible solution. With a blade in place and your scrollsaw running, gently touch a metal file to both back corners of the blade. By rounding the back corners, you enable your blade to cut tighter curves without the corners digging into the wood.

—Rocky Williams, Macomb, Ill.





A FEW MORE TIPS FROM OUR WOODWORKING PROS

- Create an antique effect with crackle medium and acrylic paints. We applied the treatment to the base for our Whale of Fortune bank. See the article on *pages 54-55* for details.
- Whittle our loon letter opener (*pages 74-75*) without the long tail, and you'll have an ornament for a desk set, clock, or other project. Paint it differently, and you can make it a duck.
- Have you ever puzzled over the right "cut" of shellac to use on a project. Discover all the tricks to this ancient finish in the article on *page 66*.

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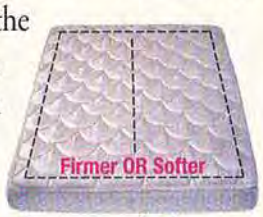

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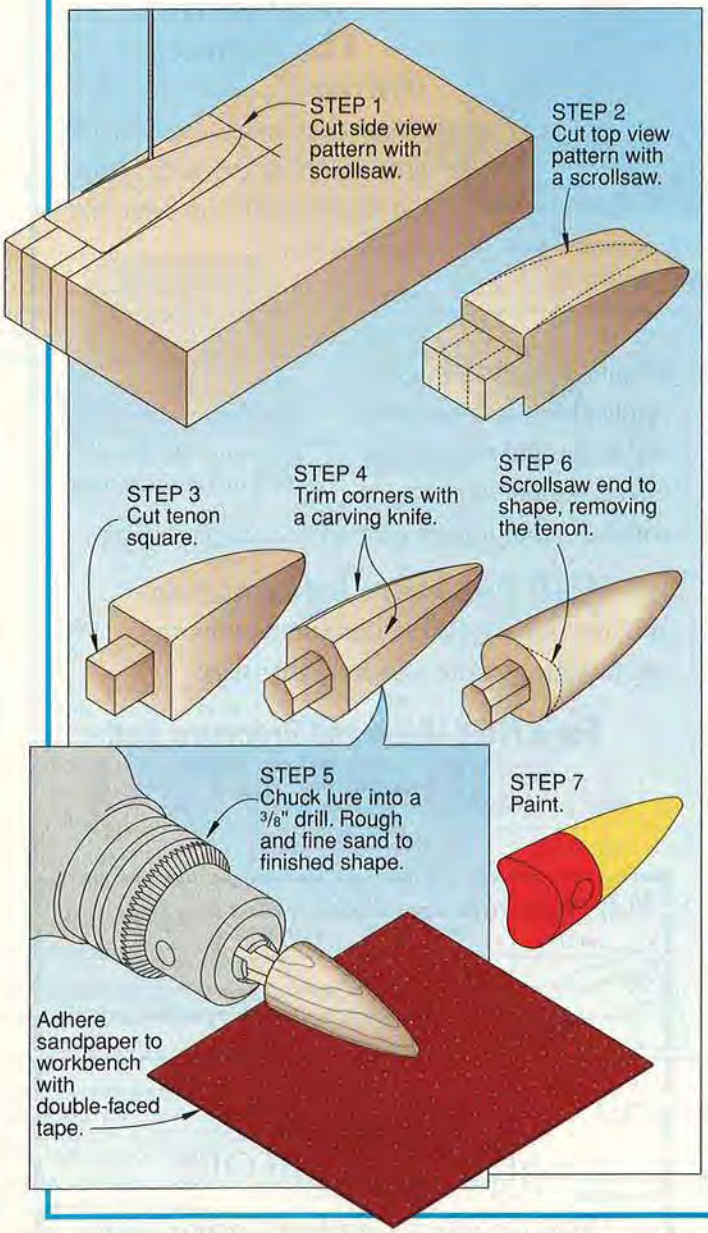
The lure of lures

After reading "The Lure of Wood" in the October 1994 issue, I found myself wanting to make some for my own use. However, as I didn't have a lathe to work with, I developed a way to turn the blanks with a ⅜" variable-speed drill and a scrollsaw.

First, I cut the lures to rough shape with my scrollsaw and remove the corners of the block and tenon with a carving knife. Then, I chuck the lure blank into my ⅜" drill and turn it round by spinning it against 60-grit sandpaper fastened to the workbench with double-faced tape. To smooth the lure surface, I repeat this step with 100-grit sandpaper, followed by 120-grit paper. I then cut the lure free from the driving pin, and it's ready to paint!

—Dan Bleck, Libertyville, Ill.


STEP 1
Cut side view pattern with scrollsaw.
STEP 2
Cut top view pattern with a scrollsaw.
STEP 3
Cut tenon square.
STEP 4
Trim corners with a carving knife.
STEP 6
Scrollsaw end to shape, removing the tenon.
STEP 5
Chuck lure into a ⅜" drill. Rough and fine sand to finished shape.
STEP 7
Paint.
Adhere sandpaper to workbench with double-faced tape.

Help from a manufacturer

I needed an 8" circular saw blade with a 1" arbor hole, to fit the tablesaw arbor of my old Paramount woodworking machine, and have looked for years to find a company that would make such a blade. In the November 1994 issue of *WOOD*® I found the answer—Forrest Manufacturing Co. The folks there will bore arbor holes in their blades up to 1½" on special order. Good for Forrest!

—Erwin Sias, Bonners Ferry, Ind.

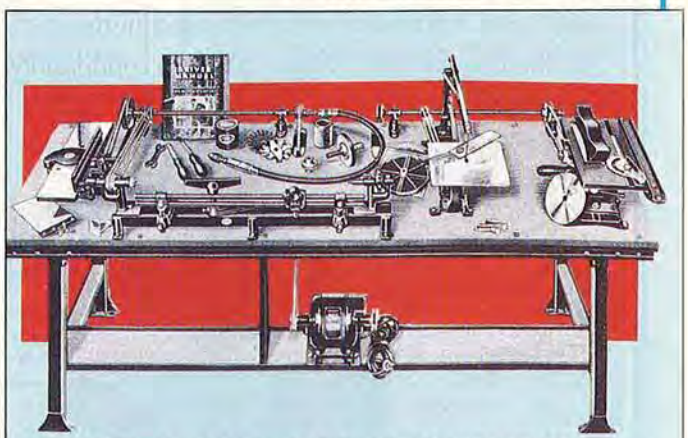
Article brings back memories of a fun and successful venture

The "Woodworking Trivia" article in the November 1994 issue almost brought tears to my eyes. In 1930, my closest friend and I scrounged up $9. It was spent as follows: a Driver tablesaw - $5, 6" planer blade - $2, and a second-hand ¼-hp induction motor - $2.

Then, by streetcar, we crossed town to the only lumberyard in Los Angeles that carried balsa wood (at that time, priced at 15¢ per board foot). For a few bucks, we got all we could carry on the streetcar. We then went home and sawed it into model airplane strips, which we carried downtown and sold to the model department of the Broadway Department Store. This was in our first year of high school, and we kept the Broadway in balsa wood model supplies for quite some time.

I still have the original 6" combination blade that came with the Driver tablesaw. The ¼-hp motor was installed on a Delta scrollsaw in 1946, and it finally burned out in 1981.

—Robert P. Shea, Santa Maria, Calif.



DRIVER WOODWORKING EQUIPMENT

Continued on page 20

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2 Small Engine Service & Repair. There are more than 65 million small engines in use today (a number growing at a rate of 1,000,000 each month). You can make $45 in just 1/2 hour for a simple tune–up, and even more for many of the simple repairs you'll learn on everything from snow blowers to bass boats.

3 Professional Saw & Tool Sharpening. Imagine a business where 90 cents out of every dollar you take in is cash profit! You'll earn $18 to $25 per hour running machines that do the work for you.

4 VCR Cleaning, Maintenance & Repair. The VCR has become a basic part of nearly every American household. You can make up to $50 per hour in this fast growing field.

5 Computer Repair, Maintenance & Upgrade. There's no doubt about it, the computerization of America is taking place! Get a jump on a high paying occupation or business of your own in a field with an unlimited future.

6 TV & Satellite Dish Repair. You see them popping up in yards all over town. The demand is growing for the variety in entertainment only a satellite dish can provide. Get the skills you'll need to profit in this growing field.

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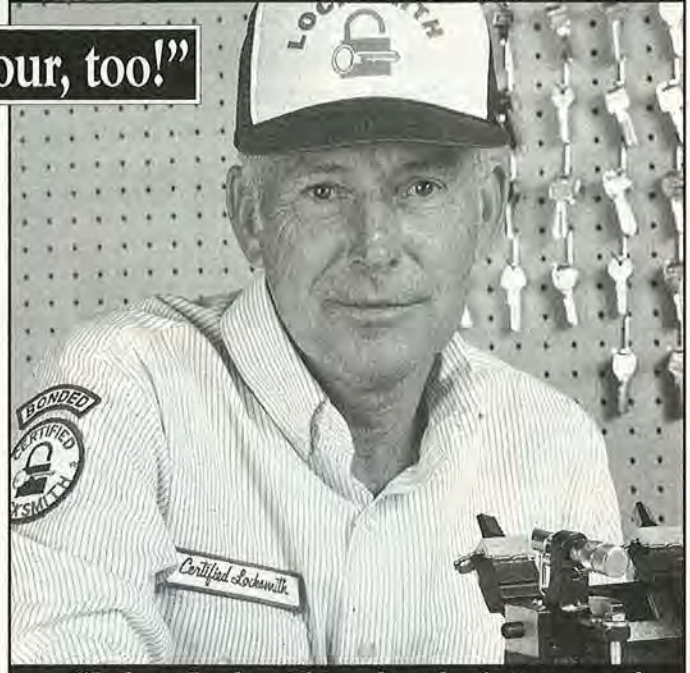

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Bill Smith

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- ❑ Computer Repair, Dept. 64269
- ❑ TV/Satellite Dish Repair, Dept. 31148
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TALKING BACK

Continued from page 18

Giving credit where it's due

Don Mostrom, *WOOD*® magazine's correspondence writer, designed the Corian-topped plant stand featured in our February 1995 issue. We inadvertently omitted Don's name from the list of credits for this project.

IDEA SHOP® 2 creates more ideas

I have come to count on *WOOD* magazine for interesting projects and tips. And after reading about IDEA SHOP 2 in the September 1994 issue, I arrived at a solution to a problem I was having in my shop, where space is also at a premium.

Here's my shop problem: pieces of wood that I rip on my tablesaw crash to the floor after they pass through the blade. And I am never comfortable with hanging over the blade while trying to balance the wood to keep it from falling.

To solve this problem, I adapted your idea of the drop-leaf extensions from the "Drop-Leaf Mobile Workbench" and added a drop-leaf extension to the back of my tablesaw that adjusts flush with the top of the tablesaw. I covered the extension table with plastic laminate so the wood slides easier.

—H. Foltz, Hagerstown, Md.

Glue prices drop as container size increases

Officials at Franklin International, the maker of Titebond II Wood Glue, have raised a couple of points about our June 1995 review of woodworking glues. According to Sharon Pantelis at Franklin, consumers can purchase Titebond II at prices lower than those listed in the article. She also said that, when compared with similar-sized containers of polyurethane glue, Titebond II offers a better value than our chart indicated.

Since the polyurethane glues come in non-standard sizes, an apples-to-apples comparison is not possible. Nonetheless, in the chart *below* we've listed the full range of prices and sizes we found as of May.

In the same article we also said that aliphatic resins (AR) glues contain solvents as opposed to the polyurethane glues which are solvent free, or nearly so. To avoid any confusion, we should point out that the "solvent" used in AR glues is only water, which does not have any of the health or environmental hazards normally associated with oil-based solvents such as paint thinner or acetone.

—Tom Jackson
General-Interest Editor

COMPARING GLUE COSTS

BRAND	CONTAINER SIZES (OZ.)	PRICES ($)	COSTS PER OUNCE
TITEBOND II	8 - 128	3 - 18	.38 - .14
ELMER'S WEATHER-TITE	4 - 8	1.67 - 2.27	.42 - .28
GORILLA GLUE	18 - 36	20 - 32	1.11 - .89
EXCEL	8.5 - 25.4	7 - 17	.82 - .67

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LS1211 12" Compound Miter Saw $809

2012	12" Planer	538
2414B	14" Cutoff Saw	224
2708W	8 1/2" Table Saw	297
3612BRA	Plunge Router	173
4301BV	Jig Saw	157
5007NBK	7-1/4" Circ. Saw	127
5090DW	3-3/8" Cordl's Saw	137
5090D	tool only	80
5402A	16" Beam Saw	529

6095DWE	9v. Cordless-2batt	137
6405	3/8" Drill	53
9820-2	Sharpener	204
9901	3 X 21 Belt Sander	129
9924DB	3 X 24 Belt Sander	183
BO4510	Square Pad Sander	49
BO5000	Random Orbit Sander	68
JR3000V	Recip-Saw	134
LS1030	10" Miter Saw	195
LS1020	10" Miter Saw	228
N1900B	3" Planer Kit	129
N9501B	Mini Grinder Kit	98

BATTERY SPECIAL

9.6 V "Black" Battery	23.50
7.2 V "Black" Battery	22.00
12 V "Orange" Battery	39.00
ML900 9V Flashlight	36.00

AIR MAKITA

AN8300	Framing Nailer	439
AN451	Coil Roofer Nailer	398
AF501	Brad Nailer	277

Makita

MAC1000	1-1/2hp Compressor	299
MAC2000	2hp Oilless Compr'sst	354

VIXBITS

size		
#3		8.95
#5		7.99
#9		7.99
#12	self centering bits for hinges	35.99
#14		35.99

PORTER+CABLE

556 Biscuit Joiner $147

100	7/8 hp Router	101
1700	HeatGun	73
2620	3/8" Drill 4.5 amp	87
2621	3/8" Keyless Drill	88
310	Laminate Trimmer	144
312	Offset Trim Router	157
332	RO Sander	65
347	7" Circular Saw	126
743	Left hand saw	127

361	3X24 Belt Sander	161
363	4X24 Belt Sander	190
410	Betterly™ Underscribe	147
411	Betterly™ MiterFold	164
447	7-1/4" Framer Saw	133
5008	12" Dovetail Jig	77
511	Door Lock Kit	138
5116	16" Dovetail Jig	252
6611	3/8" Drill 5.5 amp	123
6614	1/2" Drill	127
6615	1/2" Keyless Drill	127
666	3/8" Drill	124

690	1-1/2 hp Router	139
693	1.5hp Plunge Router	168
6931	Plunge Base	72
695	Router Table w/motor	215
696	Router Table only	127
7116	24" Doevtail jig	292
7399	Drywall Cutout	78
743	7-1/4" Right hand Saw	127
7518	Vari Sp 3"hp Router	266
7519	3 hp Router	232
7536	2 hp Router	201

345 6" Saw Boss $103

7537	2 hp D-Handle Router	207
7538	3 hp Plunge Router	234
7539	VS Plunge Router	268

7549	Jig Saw	133
7800	Drywall sander	328
7810	Vacuum	252
9118	3 1/4" Planer Kit	204
9314	Trim Saw Kit	151
9345	Sawboss w/ case	123
9690	1.5 hp Router w/case	144
96645	Screwgun w/ case	128
97310	Trimmer Kit	193
973366	RO Sander w/case	136
9743	7-1/4" Saw Kit	139

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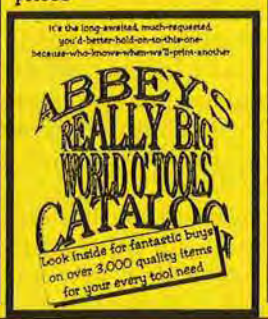
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0228-1	3/8" 0-1000rpm Drill	108
0229-1	3/8" Keyless Drill	108
0234-1	1/2" Magnum Drill	128
0236-1	1/2" Magnum Kit	148
0238-1	1/2" 0-850rpm Drill	128
0239-1	1/2" Keyless Drill	128
0244-1	0-600 rpm Magnum	127

0375-1	3/8" Close Qtr Drill	128
0379-1	1/2" Close Qtr Drill	148

0407-1	Cordless Drill Kit-2batt	172
0421-1	12V Cordl's HammerDrill	189
0567-1	Drain Cleaner	234
3300-1	Rt Angle Drill	189
3107-1	VS Rt Angle Drill	213
5192	Die Grinder	174

DEWALT

DW682K Biscuit Joiner $218

DW100	3/8" Drill	67
DW106	3/8" Keyless Drill	73
DW411	Palm Sander	58

DW930K	Cordless Saw	198
DW935K	Cordless Saw	219
DW972K2	12V Cordless drill	188
DW974K	14V Cordless drill	188

DEWALT

DW705 12" Compound $358

6494 10" Compound Miter $309

5362-1	1" Hawk Hammer	328
5365-1	1" Hawk Hammer Kit	348
5369-1	3/4" D-handle Falcon Kit	238
5371-1	1/2" Hammer Drill	184
5375-1	1/2" Hammer Drill Kit	178
5392-1	3/8" Hammer Drill	126
5397-1	3/8" Hammer Drill Kit	138
5460	7" Polisher	168

5682	2 Hp Router	165
5936	4 x 24 Belt Sander	227
6008	1/3 Sheet Sander	123
6010	1/2 Sheet Sander	123
6140	4 1/2" Grinder	94
6142	4 1/2" Grinder Kit	123
6175	14" Chop Saw	278
6266	NEW!! Jig Saw	187
6365	7-1/4" Circular Saw	119
6366	6365 w/Carbide bld	128
6368	7-1/4" Saw Kit	138
6460	10" Circular Saw	268
6490	10" Miter Saw	254
6491	10" Miter Saw w/80t Bld	274
6527	VS Super Sawzall	171
6528	VS Super Sawzall	169

6539-1	Inline Screwdriver	74
6546-1	2 spd Inline Screwdriver	81
6547-1	2 spd Screwdriver Kit	108
6758-1	Drywall Screwgun	98
6767-1	Screwdriver Kit	137
8975	Heat Gun	55
8980	Heat Gun Kit	91

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3283DVSK	RO Sander Kit$	117
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1347A	Mini Grinder	99
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2874K 14.4V $208

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2037W	Drywall gun w/50ft cord	119
2038	HD Screwgun	98
2660	Drywall Screwgun	86
2670	1/2" Impact Wrench	149
2721	1.5hp Router 1/2"collet	148
3105	Reciprocating Saw	148
3339	3hp VS Plunge Router	268
4075	7" Wildcat Grinder	165

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37-070 $247 6" Table Top Jointer

14-650	Hollow Mortise Chisler	279
Set of 4	Mortise bits	99
22-540	12" planer	388
28-180	10" band saw	163
31-050	1" belt sander	74
31-080	1" Belt 5" Disc Sander	88
31-340	1" Belt 8" Disc Sander	203
31-460	4" Belt 6" Disc Sander	126
32-100	Plate Joiner	258
36-040	8" Compound Miter	154
36-090	Sidekick 10" Miter Saw	213
36-220	10" Compound Miter	228
40-150	15" Scroll Saw	115
40-560	16" Scroll Saw	177
40-640	20" Scroll Saw	298
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OSS450 Spindle Sander $159

AP10	Replacement Blades	24.95
BS900	NEW! 9" Band Saw	168
DP80	8" Drill Press	99
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J60VK	JigSaw Kit	85
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RS115K	RO Sander Kit	69
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SC162VS	VS Scroll Saw	169
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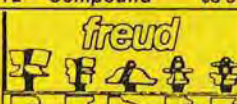

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Circle No. 2

Reversible clamp also works as spreader

If you've ever spent time modifying a clamp to use it as a spreader, you'll be pleased to note that the new Jorgensen E-Z Hold II clamp converts to a spreader clamp in just seconds.You simply knock out the nylon stop pins on the ends of the bars, slide the clamping jaw forward, and install the non-clamping jaw behind it.

Other than the spreader-clamp function, the E-Z Hold II works a lot like a Quick-Grip clamp. On both, you squeeze a handle to advance the clamping jaw. The main difference I found was that the E-Z Hold II's grip felt less cumbersome when I held the bar horizontally. With the bar held vertically, the Quick Grip's pistol-style handle feels more comfortable.

The E-Z Hold II comes with big 2×2" clamp pads and 3½"-deep jaws. You can also slide the front (non-clamping) jaw on the E-Z Hold II up and down the bar. This comes in handy when your workpiece is smaller than the clamp and you need to balance the clamp over the workpiece.

—Tested by Bob McFarlin

PRODUCT SCORECARD

Jorgenson E-Z Hold II Style 3400 Bar and Spreader Clamps

Performance	★ ★ ★ ★ ☆
Price	10" about $16, 16" about $17, 22" about $18, 28" about $20
Value	★ ★ ★ ☆ ☆

Write to: Adjustable Clamp Co., 417 N. Ashland Ave., Chicago, IL 60622. Call 312/666-0640.

RBI 812 makes milling your own stock affordable

In the past, purchasing a machine that could thickness plane, drum sand, and cut molding might cost you in excess of $1,400. But I recently had a chance to try out the RBI 812, and it does all three of these things and offers a competitive price. This is the smallest machine of its type in the RBI lineup, but it uses a lot of the same features as its bigger brothers.

As a thickness planer and drum sander, the RBI 812 handles stock up to 8" thick and 12" wide. For the molding head, the company offers knives with stock profiles, and you can special-order knives ground to your own design. As for power, the RBI 812 comes with a wood-gobbling 3-hp, 220-volt Baldor motor.

In setting up the machine, I adjusted the outfeed tables and the rolled-steel bed quickly and without a hitch. Knife adjustment on the three-knife planer head also proved easy. The knife-and-gib system allows you to clamp the planer knives without them slipping out of alignment.

I found the sandpaper installation less convenient. The solid-steel sanding head comes with hook-and-loop backed sandpaper, but the replacement paper is not tapered on the ends or cut to length, which would make installation easier.

Changing from the planing head to the sanding or molding head also proved challenging. The formed-steel flanges that surround the shafts of these heads require that you hold several pieces together while tightening the retaining bolts—a tricky task unless you have tiny fingers. This also made it more time consuming to adjust the different heads parallel to the bed. These drawbacks require a bit of patience, but they don't affect the performance of the machine. And I consider these acceptable tradeoffs for a machine that provides professional performance at a price home woodworkers can afford.

Overall, I think there are three reasons you might want to invest in the RBI 812. First, you can save money by turning rough lumber into finished stock, and by creating your own moldings. Second, it can help you get more woodworking done in less time than you would using portable power tools. And finally, the 28×35" footprint of this machine eats up a lot less space than three separate machines. Besides the three-head model I tested, you can order the 812 with the planer head only for $949, and with the planer and molder head or the planer and sander head for $1,089.

—Tested by Dave Henderson

PRODUCT SCORECARD

RBI 812 Planer with molder and sanding heads

Performance	★ ★ ★ ★ ☆
Price	$1,229 (includes outfeed roller stand, guide board, knife-setting gauge, and an extra set of knives.)
Value	★ ★ ★ ★ ★

Write to: RB Industries, P.O. Box 369, Harrisonville, MO 64701. Call 800/487-2623.

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- VARIABLE SPEEDS

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- BUILT-IN DUST EXHAUST HOOD
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- CAST IRON TABLE
- OPTIONAL HOLD-DOWN ROLLER SET

***EN3302**
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- 220V, 7,000/10,000 R.P.M.
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- OPTIONAL HOLD-DOWN ROLLER SET

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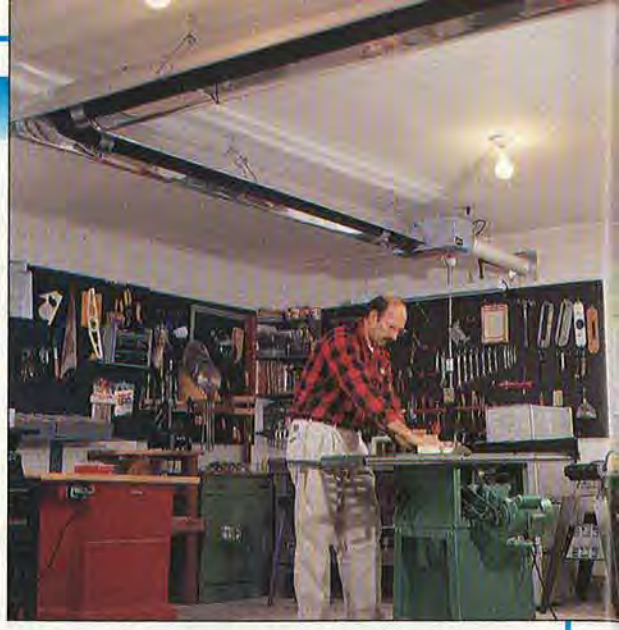
TOOL BUYERS' UPDATE

Safe and efficient RADIANT HEATING

Due to high reader interest in this subject, and our ongoing study of safe ways to warm your workshop, we recently tested an infrared radiant heater made by Detroit Radiant Products Company. Compared to competing shop-heating choices, our ceiling-mounted unit offers several unique advantages that readily offset the somewhat stiff initial investment.



Jim Harrold, managing editor of *WOOD*® magazine, enjoys a cold January day woodworking in his garage shop. An overhead radiant heater spreads warmth throughout the space.

Infrared radiant heating in a nutshell

Fueled by either natural or propane gas, and powered by a 120-volt electrical outlet, Detroit Radiant's radiant heater consists of a heating unit with an internal fan. Attached to this is a 4"-diameter aluminized steel tube (called a burner tube) that carries the heated products of combustion and vents them outside, and an aluminum reflector hood that helps direct the heat from the tube downward. This infrared heat warms the objects below, much like the sun's infrared rays on an absorbent surface.

In a shop, this might be the concrete floor or a stationary tool table. These surfaces, in turn, grow warm and radiate heat up and out, improving the temperature in the space as shown *below*.

What's so hot about radiant heating?

So far, only Detroit Radiant makes radiant heaters approved for residential applications, such as home workshops, garages, and indoor swimming pools. These "Re-Verber-Ray" models are the DBS10-25 (having a 10'-long radiant tube and generating 25,000 Btus), and the DBS20-40 (with a 20'-long tube capable of dishing out 40,000 Btus). While the smaller unit best suits one- and two-car garage shops, Joe Wortman of Detroit Radiant advised that we use the larger unit for our 22×30' garage/workshop. Joe also recommended the L-shaped configuration *above*. This localized the heat over the garage's workshop area.

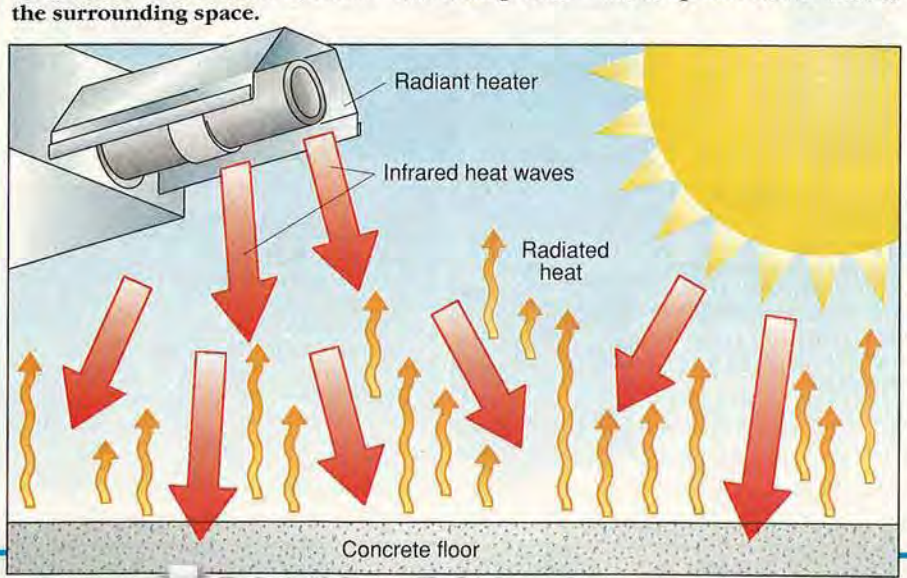
After a month's trial during January of this year, when outside temperatures dipped to a chilly 5 degrees below zero, many of radiant heating's advantages became obvious. First, equipped with an electric ignition device, the heater kicked in with a quick turn of the thermostat. In less than five minutes, infrared heat penetrated the icy air below the tubing, making it comfortable to work there.

Second, though a fan inside the heating unit moves heated combustion products through the tube, a radiant heater does not *blow* wood dust around like heaters that rely on blowers for heat distribution. That makes for cleaner shop air.

A third advantage is that the igniter and gas burner are sealed within the heating unit and isolated from the room atmosphere. Outside air feeds the flame, reducing the potential for explosion by volatile vapors or dust.

Continued on page 26

Like the sun's rays, an infrared radiant heater's tube and reflector heat the surfaces below. These same surfaces—like a shop floor—warm up and return heat to the surrounding space.



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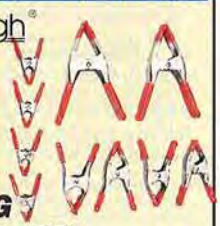

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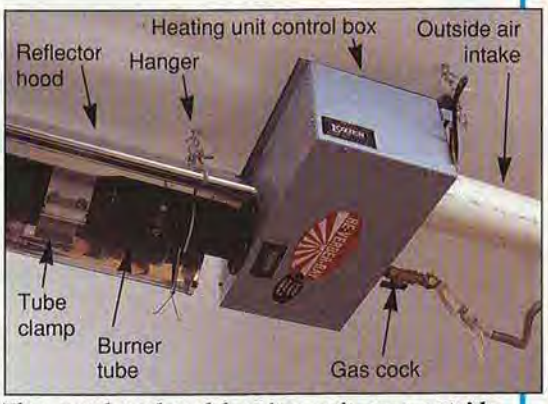
TOOL BUYERS' UPDATE

Continued from page 24

Finally, a radiant heater, according to Detroit Radiant, proves to be significantly less expensive to operate from a fuel-savings standpoint than blower-type heaters. That's by 30 percent on average.



The metal-enclosed heating unit uses outside air for combustion, separating the flame from the shop environment.

A little chilly news

Is there a downside of radiant heaters? We found a few negatives, but they're easy ones to live with. To avoid dinging the overhead reflector or tube, care must be taken when handling sheet goods or long boards beneath the heating system. In fact, Detroit Radiant recommends having a ceiling height of 8' or higher for this and fire safety reasons.

Clearance to combustibles must be watched with a radiant heater. Standard installation clearances are established for each model in the manual, but you must also take care where you place cans of finishes, wood, and other flammables when working in the shop. Parking a vehicle too close to an operating radiant heater could also be a problem, resulting in a damaged paint finish.

Finally, to prevent dust from collecting on the hoodlike reflectors and creating a fire hazard, you need only vacuum the surfaces of the unit occasionally, or blow it off with an air-compressor hose.

The price of staying warm

Our installation required extensive gas line work. That, coupled with our contractor's inexperience with Detroit Radiant's products, and the fact that hanging the unit amounts to a two-person job, resulted in a $1,100 installation cost. Add to this the $1,080 list price of the DBS20-40, which included the 90° elbow and thermostat, and you have a sizable initial investment. But, ways exist to trim this cost considerably.

Most home woodworkers may need the smaller unit, which lists for $940. And, according to Joe, "Contractors familiar with Detroit Radiant's heaters, and who buy in quantity, often drop the unit price by several hundred dollars." By doing the lion's share of the installation, including the gas-line work and running wiring, you can easily bring the total cost down to well under $1,000. But, Joe cautions, "all connections must be within code and checked by local heating and electrical inspectors."

In the end, it comes down to how much woodworking you do, or would like to do, during winter, and how much you value having a warm, comfortable shop. Our experience tells us that whether you wish to heat a one-car garage, or a 40×50' production shop, you won't go wrong installing an efficient, effective, overhead radiant heater. In the long haul, you'll be dollars ahead.

Note: For more on shop heating, see the "Hot Choices in Heaters" article in the September 1994 issue of *WOOD*® magazine.

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Detroit Radiant Heater

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Tested by Jim Harrold
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333K	333 W/CASE & 50 SHEETS PAPER	102
334	QUIKSAND W/STIKIT, DUSTLESS	75
334K	334 W/CASE & 100 SHEETS PAPER	102
340	1/4 SHT FIN SANDER W/DUST P/U	52
340K	340 WITH CASE & 10 SHEETS PAPER	75
345	SAW BOSS 6" CIRCULAR SAW	104
347K	7 1/4" FRAMERS SAW, 15 AMP WITH CASE	128
351	3" X 21" BELT SANDER	156
351K	351 W/ 10 ASST BELTS & BELT CLNR	169
352	3" X 21" BELT SANDER W/DUST BAG	160
352K	352 W/10 ASST BELTS & BELT CLEANER	173
360	3" X 24" BELT SANDER W/DUST BAG	196
360K	360 W/10 ASSORTED BELTS & BELT CLNR	211
361	3" X 24" BELT SANDER	189
361K	361 W/10 ASST BELTS & BELT CLEANER	202
362	4" X 24" BELT SANDER W/DUST BAG	209
362K	362 W/10 ASST BELTS & BELT CLEANER	225
363	4" X 24" BELT SANDER	199
363K	363 W/10 ASST BELTS & BELT CLEANER	215
410	UNDERSCRIBE LAMINATE TRIMMER	148
411	MITER FOLD LAMINATE TRIMMER	165
444	PROFILE SANDER	85
447	7 1/4" FRAMERS SAW W/BRAKE 15 AMP	137
505	1/2 SHT FIN SANDER	126
505K	505 W/CASE & 2-10 YD ROLLS PAPER	162
511	CYLINDRICAL LOCK INSTALLATION KIT	139
550	NEW POCKET CUTTER	178
556	BISC JOINER W/CASE & TILT FENCE	138
556K	SAME AS ABOVE W/1000 BISCUITS	160
690	1 1/2 HP ROUTER W/1/4" & 1/2" COLLETS	138
690K	690 W/CS, EDGE GUIDE, & TEMP GD KIT	194
691	1 1/2 HP "D" HANDLE ROUTER	155
691K	691 W/CASE, EDGE GD & TEMP GD KIT	214
693	PLUNGE BASE ROUTER, 1 1/2 HP	174
695	SHAPER TABLE W/ 1 1/2 HP ROUTER	222
696	SHAPER TABLE	128
743K	7 1/4" FRAMERS SAW, LEFT SIDED WITH CASE	128
843	7 1/4" FRAME SAW, 15 AMPS	138
2620	3/8" VSR DRILL, 0-1200 RPM W/CHK	87
2621	3/8" VSR DRILL, 0-1200 RPM, KEYLESS	87
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5009	MORTISE & TENON JIG	47
5116	OMNI JIG	257
6931	PLUNGE ROUTER BASE	73
7116	NEW 24" OMNIJIG	293
7310	LAMINATE TRIMMER, 5.6 AMP	94
7312	OFFSET TRIMMER	127
7319	TILT BASE TRIMMER	109
73333	RANDOM ORBIT DUST EXTRACTION	24
7499	CUTOUT TOOL	63
7518	3 1/4 HP FIXED BASE ROUTER-5 SPEED	267
7519	3 1/4 HP FIXED BASE ROUTER-1 SP	233
7536	2 1/2 HP FIXED BASE ROUTER	204
7537	2 1/2 HP FIXED BASE "D" HNDL RTR	213
7538	3 1/4 HP PLUNGE ROUTER-1 SPEED	242
7539	3 1/4 HP PLUNGE ROUTER-5 SPEED	269
7549	TOP HANDLE BAYONET SAW	134
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9314	4 1/2" TRIM SAW KIT	154
9315	7 1/4" BUILDERS SAW KIT	149
9345	SAW BOSS 6" CIRCULAR SAW KIT	128
9444	PROFILE SANDER KIT WITH ACCESSORIES	114
9447	7 1/4" CIRC SAW W/BRAKE & CASE	158
9637	TIGER SAW VAR SPD RECIP SAW KIT	146
9647	TIGER CUB RECIP SAW KIT	118
9843	7 1/4" LEFT SIDE SAW W/BRAKE & CASE	158
9853S	12V CRDLS KIT W/2 BAT, CASE	163
97310	LAMNT TRIMMER KIT W/4 BASES & CS	198
97335	5" RANDOM ORBIT SANDER W/CASE	129
97336	6" RANDOM ORBIT SANDER W/CASE	134
97355	5" RANDOM ORBIT W/STEEL CASE & DUST EXT	149
97366	6" RANDOM ORBIT W/STEEL CASE & DUST EXT	159
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ASK WOOD

Whether your woodworker's license reads "Beginner," "Intermediate," or "Advanced," you're bound to have a few questions about your favorite hobby. We can help by consulting our staff and outside experts. Send your questions to Ask *WOOD*®, *Better Homes and Gardens*® *WOOD* Magazine, 1912 Grand Ave., Des Moines, IA 50309-3379. *CompuServe* address: 74404,3516 (or) Internet: 74404.3516@compuserve.com

How wide a board can I edge-glue?

What is the maximum width of board I should use when edge-gluing them into a panel? Someone told me not to use boards wider than 4".

—Paul Hoesch, Planer, Wis.

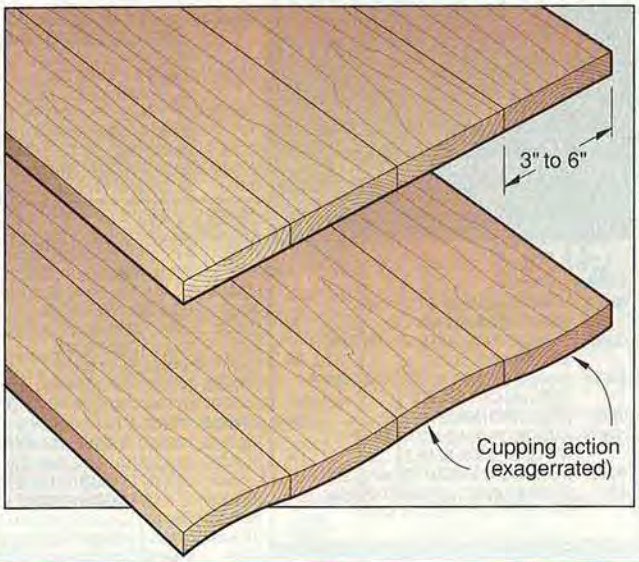
Paul, for most applications we recommend edge-gluing boards that are 3-6" wide, with an end-grain pattern like that shown in the drawing *below*. Keeping the boards within this range of width reduces the tendency of the boards to "cup" with changes in humidity.

Cupping or across-the-grain curving of a board happens because the wood on the side of the board closer to the center of the log expands more than wood closer to the outside. This difference in expansion results in the face of the board developing a curve or "cup" (see drawing *right*).

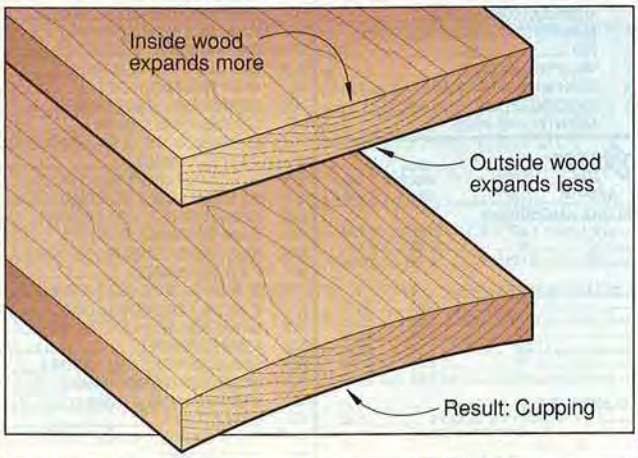
However, with care, you can successfully edge-join boards wider than 6". Here's how to do this:

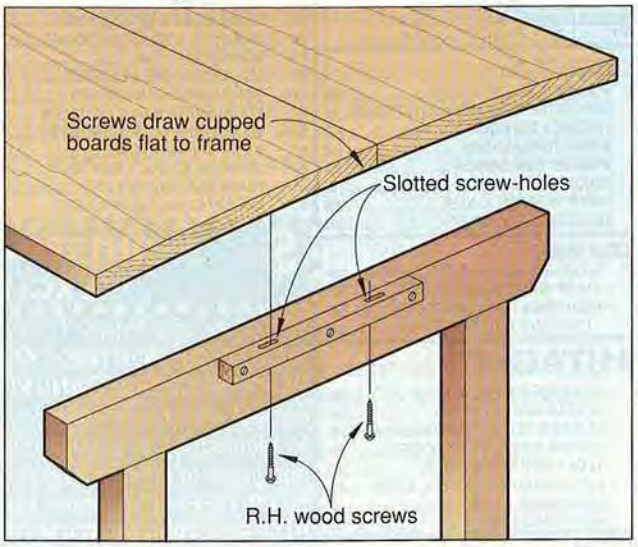
1 Make a tabletop, or the top of a chest of drawers, by edge-joining wide boards with the inside wood facing up. Then, secure the top to the table apron or chest sides with cleats or other tabletop fastening devices, mounted near the center of the panel (as shown *right center*). These will hold the center of the panel flat to the frame or sides, while allowing the wood expansion and stress to be transferred across the grain of the top.

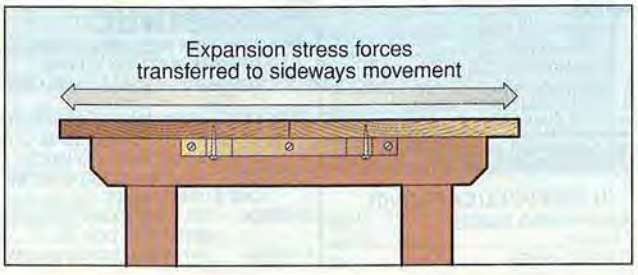
2 To edge-glue wide boards into a free-floating panel, first rip the boards into narrower (3-6" wide) boards. Then, reassemble and edge-glue these narrower pieces back into a wide board, aligning the grain to match the original as closely as possible. Cutting a wide board into narrower strips reduces the stresses that cause cupping. And, when edge-glued into a panel, the narrower lumber maintains a continuous grain figure and color.



3 Build your panels from quartersawn or riftsawn lumber. The nearly vertical grain of these boards makes them more stable and less likely to cup than plain-sawn lumber.







Continued on page 30

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ASK WOOD

Continued from page 28

What speed do I have here?

Can you tell me how to determine the spindle speeds I will get by using a 4-step pulley on my drill press?

—Dale Potts, Athens, Ohio

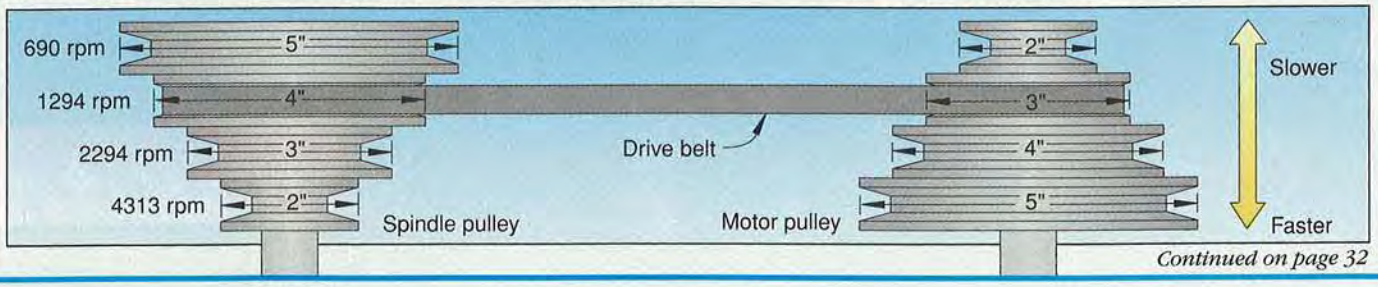
We sure can, Dale. However, to do this we will need to know a couple of things more than just the number of pulley steps. We also need to know the motor speed and the outside diameter or diameters of the drive or motor pulley. Also, 4-step pulleys are most often used in combination with a second 4-step pulley. Here's an example of the calculations, based on a motor speed of 1725 rpm, with the motor pulley and the spindle pulley having equal step diameters but inverted placement (see drawing *below*). We will assume the 4-step pulleys have step diameters of 2", 3", 4", and 5". Follow these steps to find the approximate spindle speeds:

1 Divide the diameter of the driving (or motor) pulley step by the corresponding step size of the pulley mounted on the drill press spindle:

$2 \div 5 = 0.4$
$3 \div 4 = 0.75$
$4 \div 3 = 1.33$
$5 \div 2 = 2.5$

2 Then, multiply the motor speed by the results of the above calculation to get the approximate spindle speed at each pulley step:

$1725 \times 0.4 = 690$ rpm
$1725 \times 0.75 = 1293.75$ rpm
$1725 \times 1.33 = 2294.25$ rpm
$1725 \times 2.5 = 4312.5$ rpm



Continued on page 32

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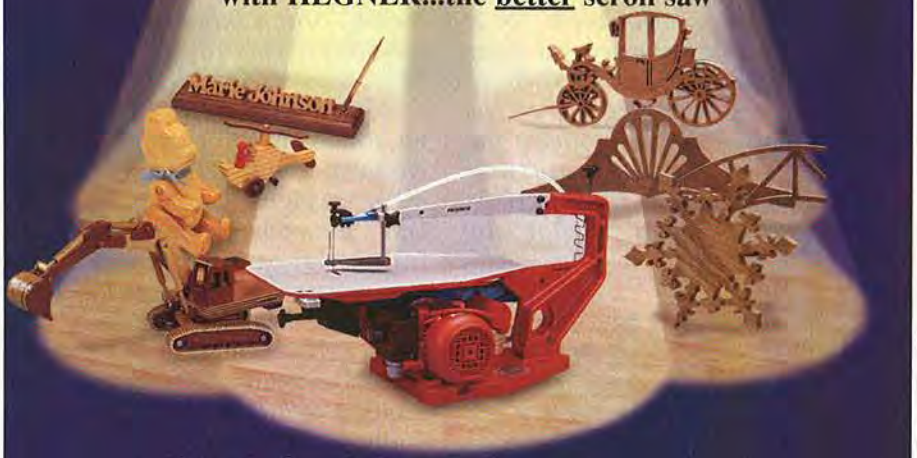

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ASK WOOD

Continued from page 30

Easy remedies for sawblade resin-buildup

I have worked with wood for a few years, and have several types of saws. The manuals for these tools discuss maintenance of the saws themselves, but none of the manuals discuss the maintenance of the saw blade. How often should I clean circular saw blades, and what are the proper methods of cleaning them?

—Edward C. Laner, West Covina, Calif.

Ed, for an answer to your question we talked with LeRoy Bell, a technical services representative for DML, Inc., a large manufacturer of industrial-quality saw blades. Leroy gave us these tips for maintaining circular saw blades:

"Saw-blade cleaners that are readily available to woodworkers include oven-cleaners and white-wall-tire cleaners. Both of these products work well for removing built-up resin and pitch. Just remember to wear rubber gloves when using the oven cleaner.

"To slow down the accumulation of resin and pitch," LeRoy says, "several of my customers treat their blades with WD-40 or a silicone spray before cutting wood. Just be sure to wipe the sawblade thoroughly after spraying, and start the saw with the blade completely lowered to keep any overspray inside the saw cabinet. Then, make a couple of cuts on scrapwood to prevent the coating from rubbing off and staining the wood in your project."

At *WOOD®* magazine, we have found that how often you need to clean your sawblades depends on the type and the dryness of the wood being cut. Cutting green wood results in a much faster resin buildup than does dry wood. And woods such as pine and cherry, with a high-resin content, will cause a faster accumulation of resin on the sawblades than will low-content woods such as oak, maple, walnut, and mahogany.

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Delta 9"x80Tx5/8"	$204	$119
Ryobi–Makita & all 10"x80Tx5/8"	$207	$129
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9"X40T	$146	$ 99
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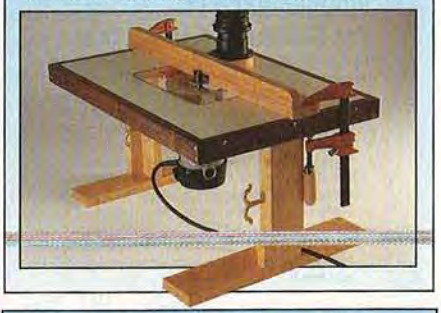

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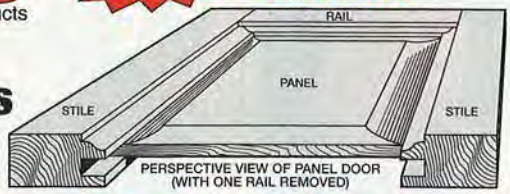

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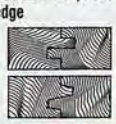

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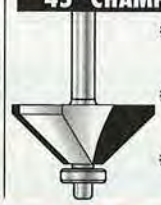
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Classic CANOE CRAFTSMANSHIP

New Englander Carl Bumbaca turns his finish-carpentry skills to building cedar-strip canoes.

You normally wouldn't think of the historic Lexington-Concord area of Massachusetts as canoe country. It's dotted with Revolutionary War monuments, national historic sites, and Colonial inns. But to Carl Bumbaca, of nearby Bedford, the placid water of the Concord River above and below famed North Bridge—site of the second clash between American patriots and the British in the spring of 1775—is canoe country indeed.

Any time Carl can get away from his finish-carpentry business, you'll find him there, paddle in hand. And even the tourists who flock to the battlefield pause from their wanderings to admire the lone canoeist's handsome craft afloat on the river. For Carl, their admiration is as rewarding as the sense of accomplishment he felt in building his graceful craft.

That's because "the stripper" as he calls the canoe, was skillfully constructed of thin strips of white cedar, then carefully fiberglassed, sanded, and varnished. In total, the lightweight craft (a 16-footer weighs but 72 pounds) represents nearly 80 hours of his labor. But far more than an example of his craftsmanship, the wooden canoe represents an emerging entrepreneurial dream: a new business of his own, but doing what he has always wanted to do.

Continued

The historic North Bridge at Concord, Massachusetts, forms the backdrop for Carl Bumbaca deftly paddling one of his hand-crafted, white-cedar-strip canoes.

CANOE CRAFTSMANSHIP

The theft that launched a business

An avid outdoorsman since childhood, Carl, 45, recalls how he first came to build a cedar-strip canoe. "Back about eight years ago, my friend Wally and I were doing a lot of duck hunting on the Concord River. We used an old 11½' johnboat that we chained to a tree when it wasn't in use. Then one day it turned up missing. Someone had cut the chain and stolen it."

Rather than replace the stolen boat with a similar craft, Carl and his friend decided to build something special—a craft to be proud of, and tailored to their needs. After trips to the library, they decided to tackle one made from strips of white cedar. "We could have used marine plywood and built a johnboat, but that's definitely not me. Whatever I do usually has got to have detail in it, not just slam-bam construction," says Carl.

The pair selected a canoe design that would work for them. "It was a 1920 Old Town Grand Laker," explains Carl. "But I modified the design by raising the gunwales and flattening out the bottom a bit more. That way it would be more stable and carry more gear. As it turned out, the canoe has a 800-pound payload. We use it on camping and fishing trips to Maine, but I don't sell the plans for it."

Carl and Wally's 20' cedar-strip canoe took nearly 10 months of spare time—and learning—to build. But it has proved itself in years of service. And for Carl, the project spawned an idea for a brand new business.

"A year or so after we finished the canoe, I was lying in bed one night thinking about all the fun we had building that first stripper," Carl remembers. "Then I began thinking about my finish-carpentry business and how I find that most people can't visualize. That is, they can't look at a stack of wood and see the fireplace mantel that I'm going to build for them. But after 25 years of finish carpentry, I can. That's why building the strip canoe was easy for me. I just read the book and visualized the steps.

"Suddenly, it came to me," Carl continues. "What about doing a video on strip-canoe building? People could actually see how one goes together. And with a video, if you don't catch on to some aspect of the construction, you just hit the reverse button and replay it as much as necessary."

The video didn't come quickly. It took the experience of building a couple more strip canoes before Carl felt confident enough to "teach" others. Two he donated as raffle prizes to local charities. Another he kept for display and promotion purposes. But building them sparked another idea that hitchhiked on the first.

"I was having a good time making them [the canoes] and thought that others could, too," says Carl. "And I saw what they brought as raffle prizes—nearly $2,000 each. So I thought that kits just might work. A youth group, for instance, could buy a kit from me, build the canoe as a project, then make money raffling it. After all, the strip canoe is a real eye-catcher." His ideas—the video and the canoe kits—were enough to launch his business dream, the Paleo Canoe Company.

Print this article

Carl likes to add a redwood accent stripe to his canoes' white-cedar hulls.

Video help for canoes in a box

Carl adopted the name for his canoe company from the Paleo Indians, an early primitive hunting people who were said to roam New England. "Of course, the Paleo Indians probably never conceived of a thing called a canoe!" he notes.

A real do-it-yourselfer, Carl decided to tackle his video idea himself. "My cousin used his camcorder to film me at work building a canoe

right here in my shop," he explains. "It took six weeks of evenings and weekends to film, then I had it professionally edited down to 2½ hours. In all, we covered the entire 24 steps that it takes from start to finish to make a cedar-strip canoe."

Kits were a natural extension to the video. "I went ahead with them because it occurred to me that not everybody who bought a video would be able to get all the material and supplies needed," Carl comments. "White cedar, for instance. I have a source up in Maine where I can get it by the truckload. But what about someone in California? And fiberglass. How many places will sell you enough for a whole canoe? Yet, I had developed good sources for everything that goes into one."

As it stands, Carl now can assemble the complete canoe kit (14' kit, $595; 16' kit, $670, with instructional video and full-sized patterns) and put it in a 10' box in about two hours. And that includes all that's needed except the plywood for the forms, two sawhorses, the wood for the rack to build it on, called a strongback, and the glue.

"The white cedar goes out as 1×4s, more than enough to rip the 75 strips required for a canoe," says the craftsman. "Then there's the epoxy resin, the fiberglass, and the white oak for the gunwales, thwart, and decks [see drawing *below*]. The ash seats come ready to install. Besides a small tablesaw to rip the strips—or a portable circular saw mounted upside down in a stand—all the buyer needs are basic tools."

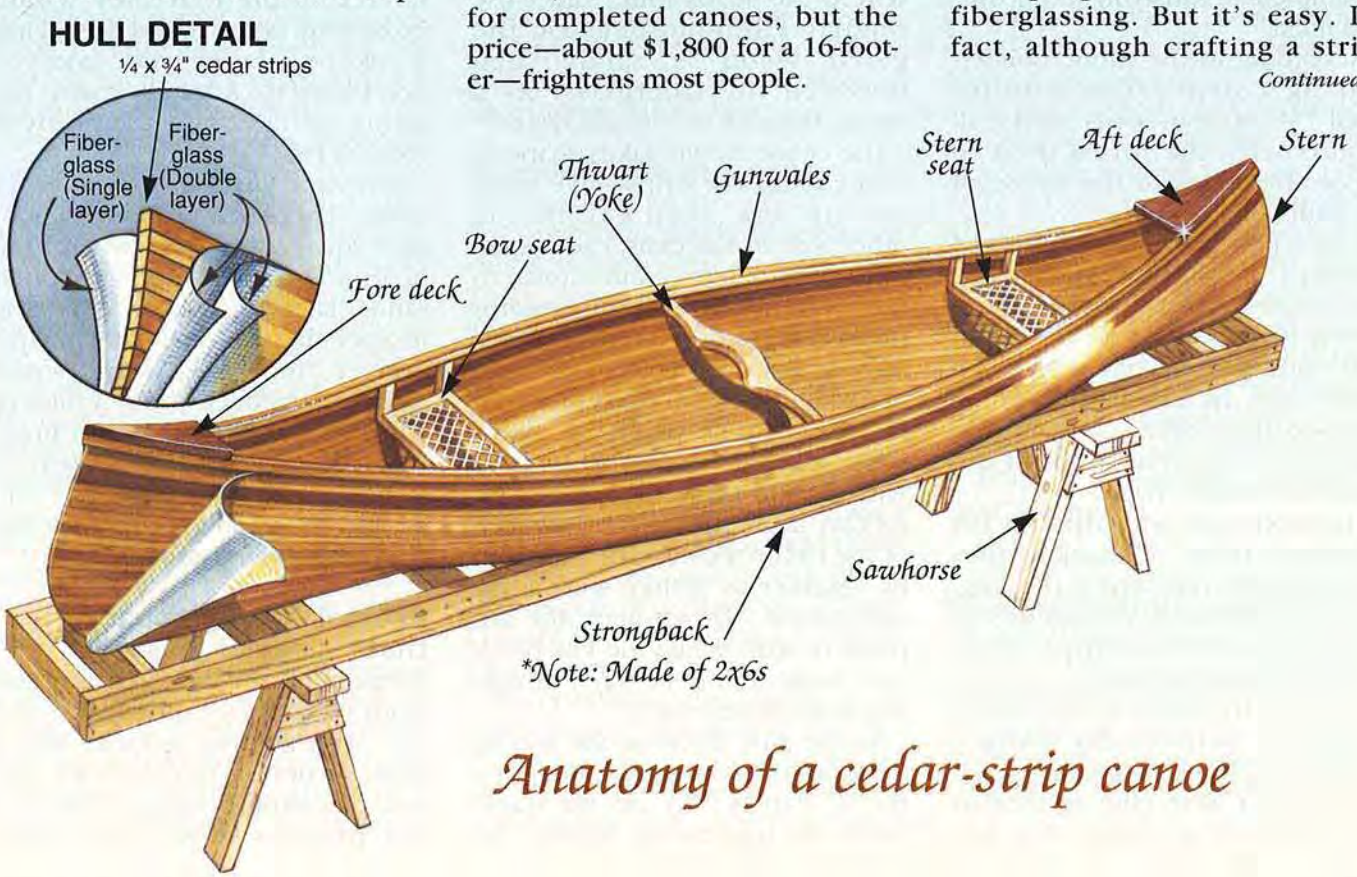
Since he began marketing the video in 1990, it has outsold kits by at least 10-to-1. He has sent videos to Japan, Australia, New Zealand, and the Netherlands, besides all across the U.S. "The video has been popular because people who have access to all the materials don't need the kit," says Carl. "For those who can't get all the parts and supplies they need, I'll sell them separately." Of course, Carl also will fulfill orders for completed canoes, but the price—about $1,800 for a 16-footer—frightens most people.

Where does Carl advertise? He began marketing the kits and videos at New England hunting and fishing expositions and was pleasantly surprised. "Frankly, not everyone who canoes is a woodworker or even wants to try to build one," he says. "And several people who bought videos don't even canoe, but just wanted the satisfaction of building one. So, I've had the best luck running ads in woodworking and do-it-yourself magazines. Then, of course, there's word of mouth. And it never hurts to carry a canoe on top of my truck. Why, I've even been pulled over by the highway patrol, just so they could find out more about the neat canoe!"

The "cookies and milk" of strip-canoe building

"More people are afraid of the fiberglassing in building a strip canoe, rather than the woodworking part," comments Carl. "And that's understandable since most people haven't done any fiberglassing. But it's easy. In fact, although crafting a strip

Continued



Anatomy of a cedar-strip canoe

Building a cedar-strip canoe with Carl

It takes only about 45 minutes to rip the 75 ¼×¾" cedar strips for a canoe. But gluing each one and stapling it to the hull forms requires days of labor.

The white cedar bends easily to the shape of the canoe's hull forms. Occasionally, Carl must use a small hand plane on a strip to obtain a better fit to the form's contour.

canoe is labor intensive, it's really as simple and satisfying as cookies and milk."

According to the canoe builder, making a strip canoe requires from 75-100 man-hours. And it all begins with the forms used to guide the strips to the shape of the hull.

Carl's kits come with full-sized patterns for the five hull forms. And Carl starts by gluing them down to pieces of ¾" plywood and cutting them out with a jigsaw. Then, he builds the strongback—a ladderlike platform that sets atop sawhorses to hold the canoe as it takes shape.

He next rips ¼" strips on his tablesaw from ¾"-thick white-cedar boards measuring 10' long. It goes fast; about 45 minutes to saw all the needed strips. Then comes the tedious part.

"It's really labor intensive to apply the strips to the forms," notes Carl. "That's because each strip has to have glue applied to all its mating surfaces—the top and bottom edges and the ends where the strips join. And I use regular Titebond because the glued wood is sandwiched between the fiberglass. As a result, the glue never sees water."

The canoe slowly takes shape as Carl lays up the strips—five strips on one side, then five on the other side of the craft, each glued to the one before it and stapled to the forms, as shown in the photos *above*. "If you add too many strips on one side, you take the chance of kicking the stem off center a little," he cautions, pausing to shave some wood off the back of a strip with a hand plane for a better fit. As Carl nears the bottom, or keel, of the canoe, he cuts the pieces to fit together as if they were a jigsaw puzzle. "Down here, the last piece of strip is like the key block in a stone arch," he says, chuckling at his observation.

As the glue dries on the laid-up strips, Carl backtracks, pulling out the ⅝" staples. "To me, the staple holes are interesting details," he offers. "But some woodworkers have told me that they would bead and cove the strips. That would be a lot of work, and you don't have to. After all, you're not going to take the canoe over Niagara Falls!"

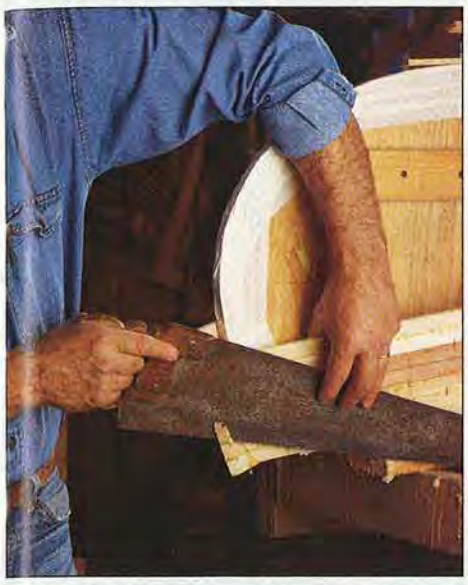
Carl stands back to look over his work. There are yellow beads of glue squeeze-out everywhere. But he'll sand them down with a belt sander later. Right now he's trying to spot the inevitable small gaps, gouges, and holes in the wood where knots once were. A filler of Durham's Rockhard Wood Putty will take care of them. Next, a sanding with 80-grit outside and in, and the canoe is ready for the next step, fiberglassing.

Presto! A tough coating that's clear as glass

It takes about 45' of fiberglass cloth to cover a canoe inside and out. And at first, it looks like a scary process. But, as with the rest of canoe building, Carl has the process down pat. First,

"It's as if you owned a treasured '59 Corvette."

Bumbaca



At the stem (front) of the canoe, the strips from each side must be mitered where they meet. Carl simply lays the saw against the form to get the right angle.

After priming the white cedar with a coat of resin, Carl drapes the hull with the first coat of fiberglass cloth. When he works resin into the cloth, it becomes transparent, letting the wood show through.

The finished canoe has fiberglass inside and outside, and a coat of spar varnish. The ash thwart that Carl fastens in place functions as a yoke that fits against the neck when portaging the 72-lb. canoe.

though, he uses a paint-roller-type spreader to prime the cedar hull with a coating of resin (West System Two-Part Epoxy), then lets the base coat dry a day.

"I've found that in fiberglassing a canoe, it works best to do the outside first, which is easier than the inside. That way, you get used to the technique," Carl advises. Eventually, the wooden hull will get three fiberglass coats—two on the outside, one on the inside. "The first outside coat only covers the hull up to the waterline without any folds," explains the canoe builder. "You learn to work the material on that one. Then, the next coat is a full 60" width of goods, so there's no piecing (see photo *above*). It goes right around the whole boat."

According to Carl, fiberglassing is not without its own brand of magic. "The first time I fiberglassed, I couldn't believe how that silvery white cloth turned clear as glass when I worked the resin into it with the spreader. It was fascinating! Even the wrinkles disappeared. But, you do have to work fast. The two-part resin sets up in about half an hour."

A good finish preserves a wooden canoe

Carl gives the newly fiberglassed canoe at least a day to fully cure. Then, he sands the hull down lightly with 100-grit sandpaper to provide better adherence for the coat of spar varnish with ultraviolet-light inhibitors that he'll brush on. "If you don't put on spar varnish, the wood darkens and the fiberglass resin will break down," he says. (Note: Carl has used these brands with good results—Helmsman by Minwax, Z-Spar Flagship, and Interlux Clipper Clear Varnish.)

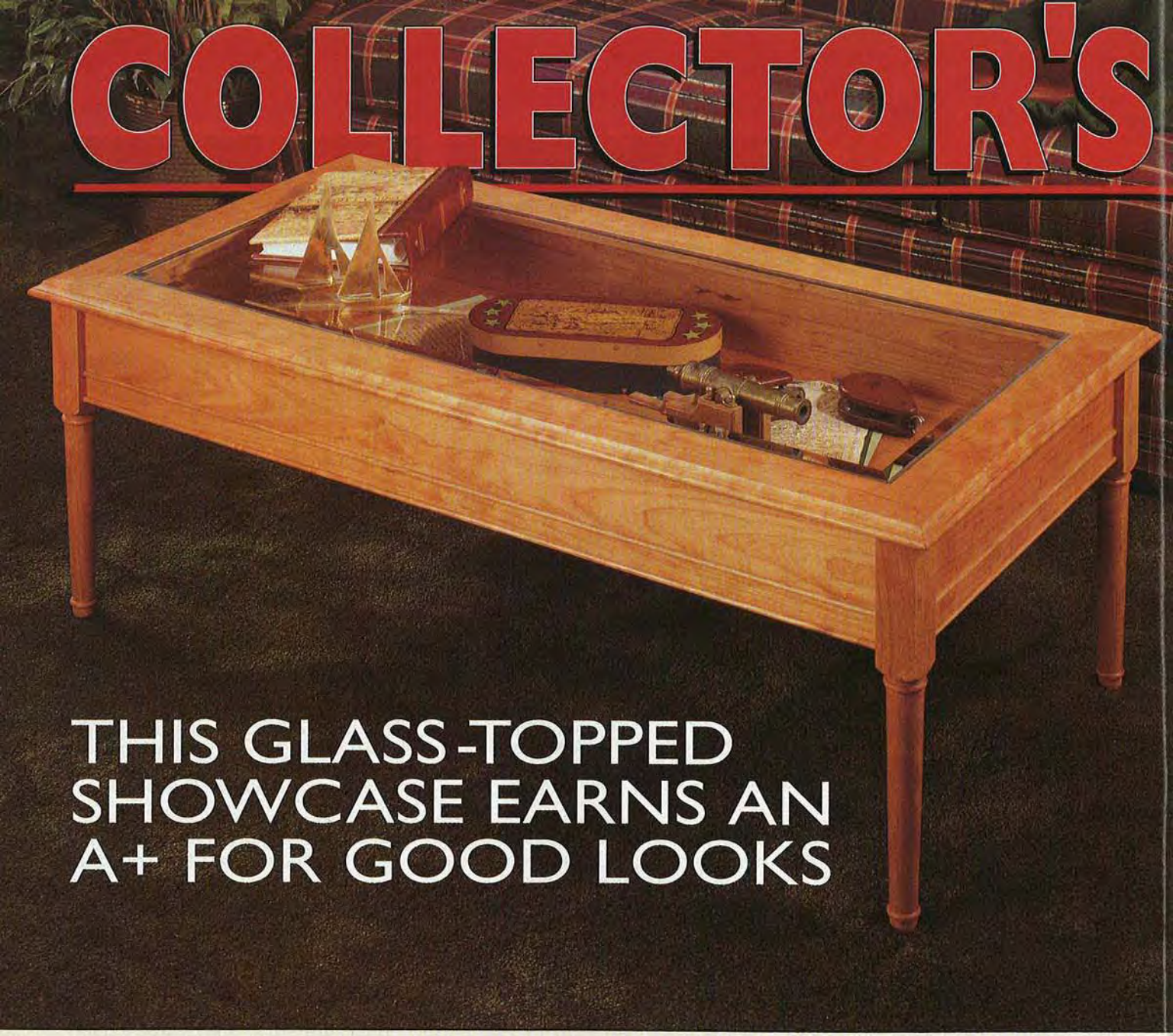
To complete the canoe, Carl cuts, shapes, installs, and finishes the white-oak gunwales, fore and aft decks, the ash-and-cane seats, and the thwart (or carrying yoke) that runs between the gunwales (see photo *above*). For the final step, Carl brands his company logo on the sides of the craft.

"A strip canoe is something you're going to have for the rest of your life and get a lot of enjoyment out of," says Carl proudly of his creation. "It's rugged, but remember you have to care for it like a classic car. You should keep it waxed for protection. And depending on whether you store it indoors or out, and how much you use it, you might want to sand it down once a year and revarnish it. It's as if you owned a treasured '59 Corvette."

Curious about canoes?
Carl's 2½-hour video, "Building Your Cedar Strip Canoe," is available for $39.95 (U.S.) plus $3 shipping, from Paleo Canoe Co., Box 491, Bedford, MA 01730. 617/275-3004.

Written by Peter J. Stephano Photographs: Steve Uzzell Illustration: Jim Stevenson

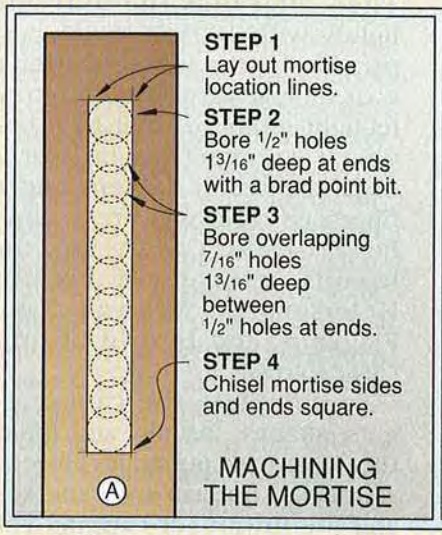
COLLECTOR'S

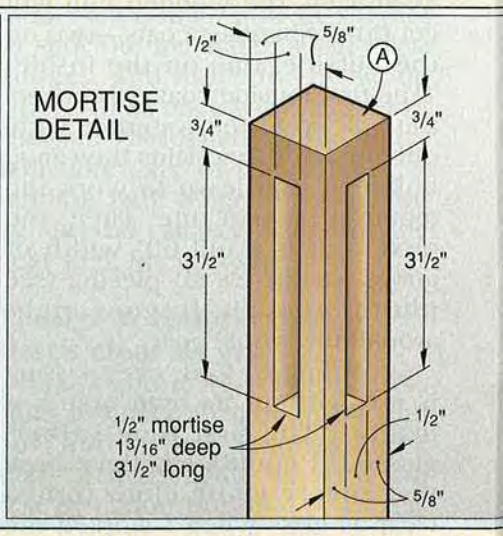


THIS GLASS-TOPPED SHOWCASE EARNS AN A+ FOR GOOD LOOKS

If you have a treasured collection of curios, you probably understand how difficult it can be to find just the right place to display it. But now, with this traditionally styled coffee table, you have a unique option.

If you're not a turner, don't let the legs discourage you from building this project. You can purchase custom-turned legs from the Buying Guide in the Bill of Materials.


STEP 1
Lay out mortise location lines.
STEP 2
Bore 1/2" holes 1 3/16" deep at ends with a brad point bit.
STEP 3
Bore overlapping 7/16" holes 1 3/16" deep between 1/2" holes at ends.
STEP 4
Chisel mortise sides and ends square.
A
MACHINING THE MORTISE



Print this article

COFFEE TABLE

A foursome of legs holds the project upright

1 To make the legs (A) you'll need four pieces of cherry 1¾" square by 17¼" long. If you don't have stock this thick, you can laminate thinner stock. If you laminate thinner stock, make the blank extra long, and trim both ends for a *17¼" preturned length*, allowing for 1" waste at the bottom (headstock) end of each leg. See the Turned Leg drawing for reference.

2 Mark diagonal lines on each end of each leg to find center. Indent each centerpoint with an awl.

3 Mount a leg blank between centers on your lathe. The bottom end of the leg blank will be the end at the headstock spindle. Using a skew or gouge and a parting tool, turn the taper and beads on the bottom 10½" of the leg to the shape shown on the Turned Leg drawing. Sand the turned area smooth, and trim the bottom of the leg for a *16¼" finished length*. Repeat for each leg.

4 Mark mortises on adjacent surfaces of each leg where shown on the Mortise detail accompanying the Turned Leg drawing.

5 Following the four-step procedure on Machining the Mortise drawing for reference, machine the mortises where marked.

Cut the side and end rails

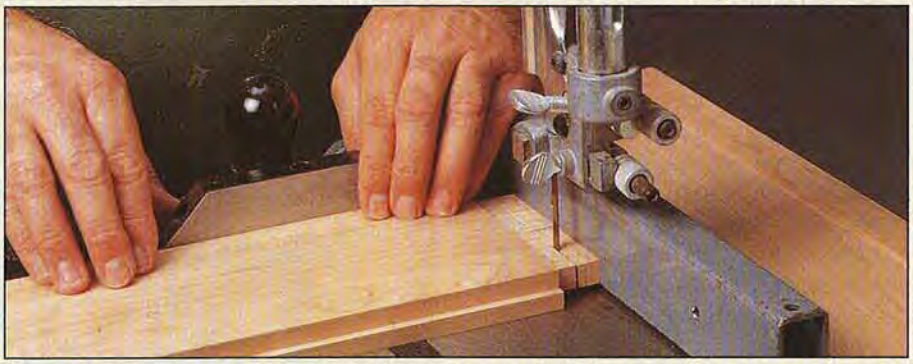
1 From ¾" cherry, cut the side and end rails (B, C) to size.

2 For securing the tabletop to the end rails (C) later with a brass screw, drill a countersunk mounting hole centered from end-to-end and ⅜" from the top edge on the *outside* face where shown on the Section View detail accompanying the Exploded View drawing.

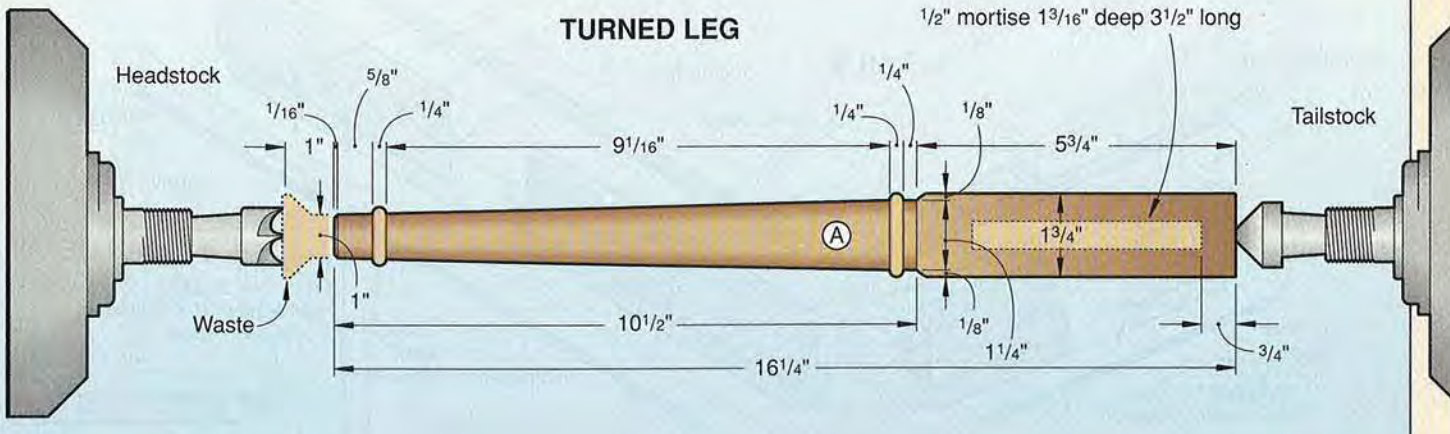
3 Fit your tablesaw with a dado blade and your miter gauge with a wooden extension. Cut the 1⅛"-long tenons on the ends of each rail. See the Tenon detail accompanying the Rails drawing for reference. (We cut scrap stock first to verify the fit of the tenons into the mortises in the legs. When checking the fit of tenons in mortises, we wrapped a piece of paper over the end of the tenon, and then slipped the tenon into the mortise. The paper ensures you have enough room for glue coverage for a strong joint. An extremely tight fit can force the glue off the mating surfaces when fitting the pieces together and make for a glue-starved joint.)

4 Mark the notches on the rail tenons where dimensioned on the Tenon detail accompanying the Rails drawing. For correctly fitted mating joints later, carefully note the configuration of the tenons on the Tenon detail. The mating tenons at each leg overlap. Next, position the fence on your bandsaw and cut the notches to shape as shown in the photo *below*.

Continued



After cutting the rabbets to form the tenons on the tablesaw, mark the notches and cut them to shape on the bandsaw.



COFFEE TABLE

5 Referring to the Exploded View and Rails drawings for reference, cut a ¼" groove ⅛" deep 1" from the *bottom* edge along the *outside face* of each rail (B, C). This groove will house the decorative bead strips (G, H) later.

6 To house the cherry plywood bottom (D), cut a ¼" rabbet ⅜" deep along the bottom edge on the *inside face* of each rail.

7 Dry-clamp the tenoned rails between the legs to check the fit. Note that the *top edge* of the rails must be ¼" from the *top end* of the legs to leave room for adding the top bead strips (E, F).

8 Measure the rabbeted opening, and cut the ¼" plywood bottom (D) to size, notching the corners.

9 Rip and rout the top and bottom decorative bead strips (E, F) to size plus 2" in length.

10 To make the narrower bead strips (G, H), start with one ¼"-thick strip 2×21" and a second strip 2×45". Rout a ¼" bullnose on each edge of each of the two strips where shown in Step 1 on the Bead detail accompanying the Rails drawing. Now, as shown in Step 2 of the detail, rip ¼" off the edges of each strip for the bead pieces (G, H). (We found it much easier and safer to rout wider stock initially, and then rip the bead strips from the edges.)

Continued

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
BASE					
A* legs	1¾"	1¾"	16¼"	C	4
B side rails	¾"	4½"	45¼"	C	2
C end rails	¾"	4½"	21¼"	C	2
D bottom	¼"	20¾"	44¾"	CP	1
E* side-rail bead	¼"	⅞"	43"	C	4
F* side-rail bead	¼"	⅞"	19"	C	4
G* side-rail bead	¼"	¼"	43"	C	2
H* end-rail bead	¼"	¼"	19"	C	2
TABLETOP					
I* frame sides	¾"	3½"	48"	C	2
J* frame ends	¾"	3½"	24"	C	2
K cleats	¾"	1"	18 15/16"	C	2

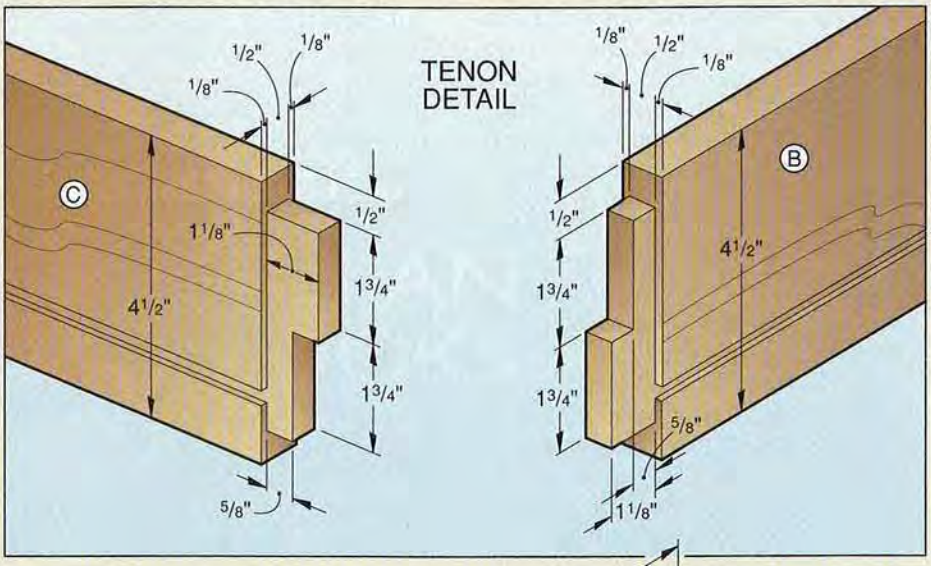
*Initially cut parts marked with an * oversized. Trim to finished size according to the how-to instructions.

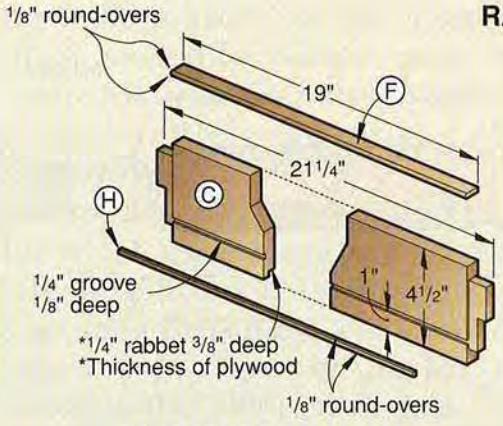
Materials Key: C–cherry, CP–cherry plywood

Supplies: #17×¾" finish nails, ¼"-thick glass, ⅜"-wide adhesive-backed weather strip (we used Dennis brand, measuring 7/32" thick, ⅜" wide, by 17' long and made from EDPM rubber), 2–#8×1¼" ovalhead brass wood screws, 4–#8×1½" flathead wood screws, ¼"-thick hardboard or plywood for splines, clear finish.

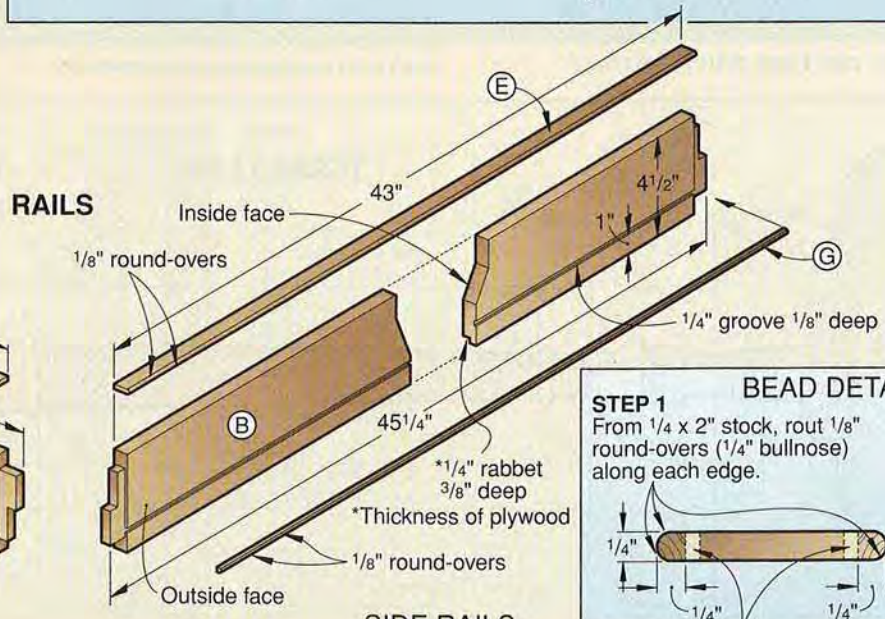
Buying Guide

Leg and lumber kit. 1¾"-square preturned cherry legs 16¼" long, $29.95 ppd. for four legs, kit no. 300990. Add $98.50 for enough cherry stock (cut slightly oversized) for the rest of the table, kit no. TBL-WOOD. Add $4.95 for 11' of ⅜" weather strip, kit no. TBL-STRIP. Schlabaugh & Sons Woodworking, 720 14th Street, Kalona, IA 52247, or call 1-800-346-9663 to order.

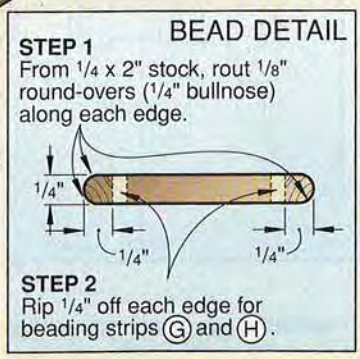


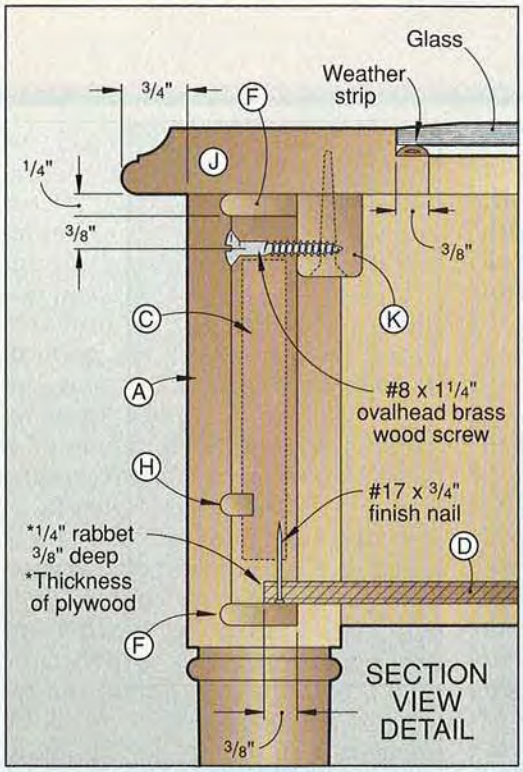


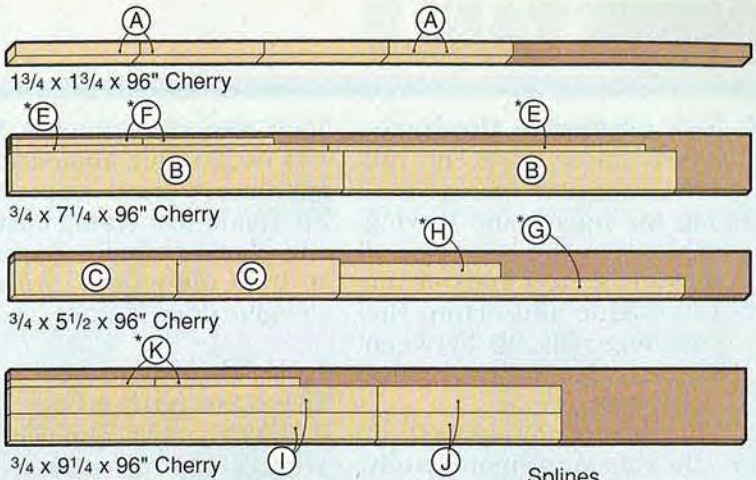
END RAILS



SIDE RAILS

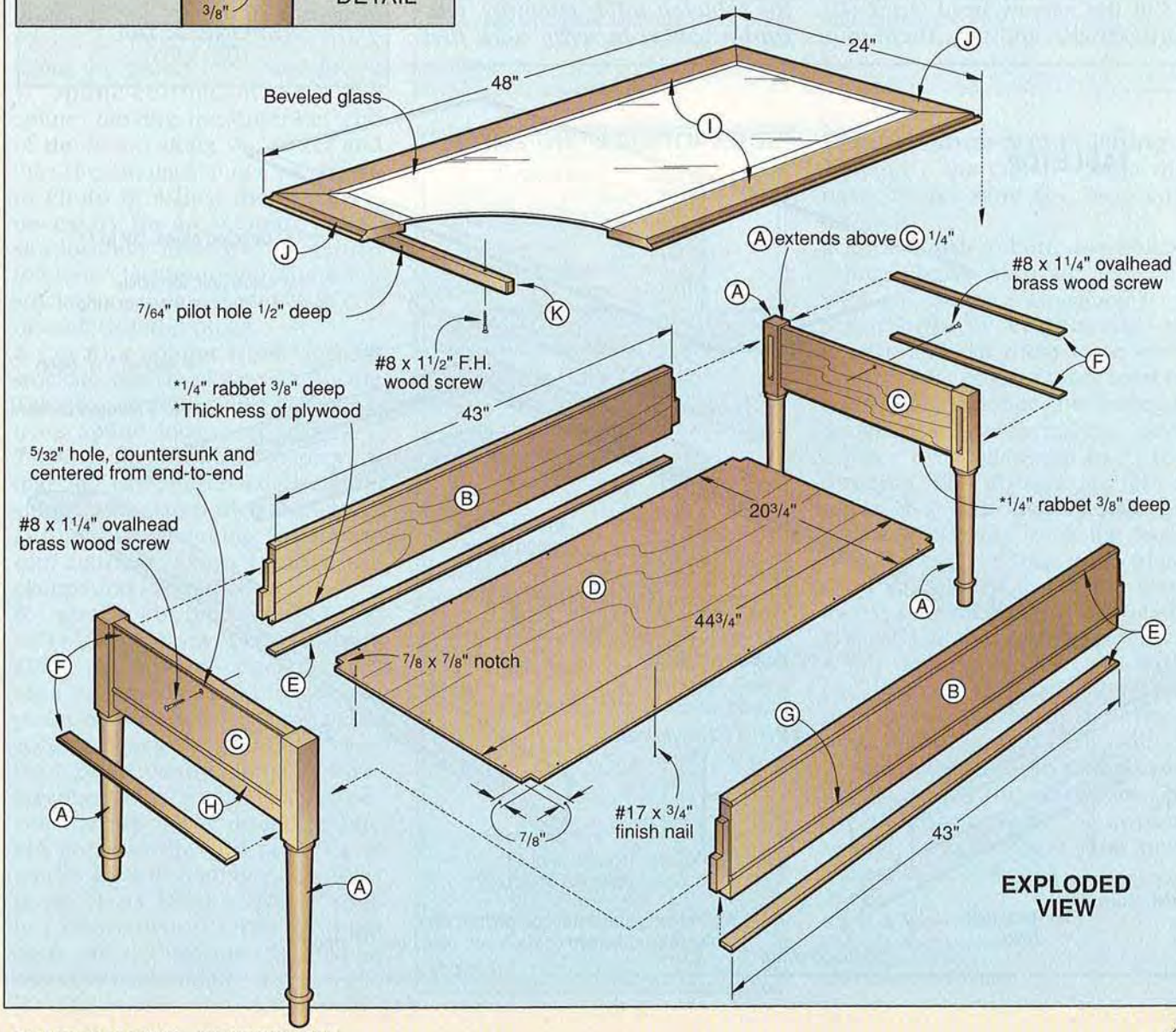

BEAD DETAIL
STEP 1
From 1/4 x 2" stock, rout 1/8" round-overs (1/4" bullnose) along each edge.
1/4"
1/4"
1/4"
STEP 2
Rip 1/4" off each edge for beading strips G and H.





*Plane or resaw to thickness listed in the Bill of Materials.

CUTTING DIAGRAM



EXPLODED VIEW

OK, let's assemble the base

1 Glue and clamp each end rail (C) between a pair of legs (A), checking for square and leaving ¼" gap between the top edge of the rails and the top ends of the legs. Later, glue and clamp the two remaining rails (B) between the two end assemblies. Again, check for square.

2 Nail the plywood bottom (D) in place. Do this step immediately after gluing and clamping the rails to the legs. The plywood bottom helps keep the assembly square while the glue dries.

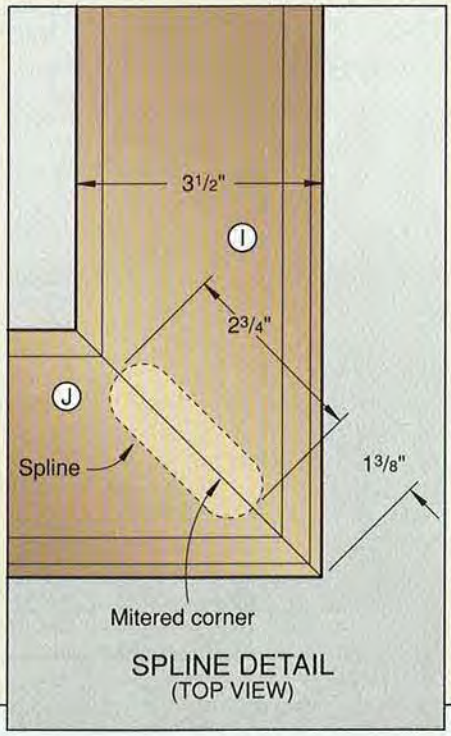
3 Crosscut the top and bottom bead strips (E, F) to length, and glue them in place where shown on the Section View detail.

4 Cut the narrow bead strips (G, H) to length, and glue them into their respective grooves. Wipe off any excess glue immediately. (For the narrow bead strips G and H, we found that spring clamps with the plastic-coated ends work well to hold the pieces in place until the glue dries.)

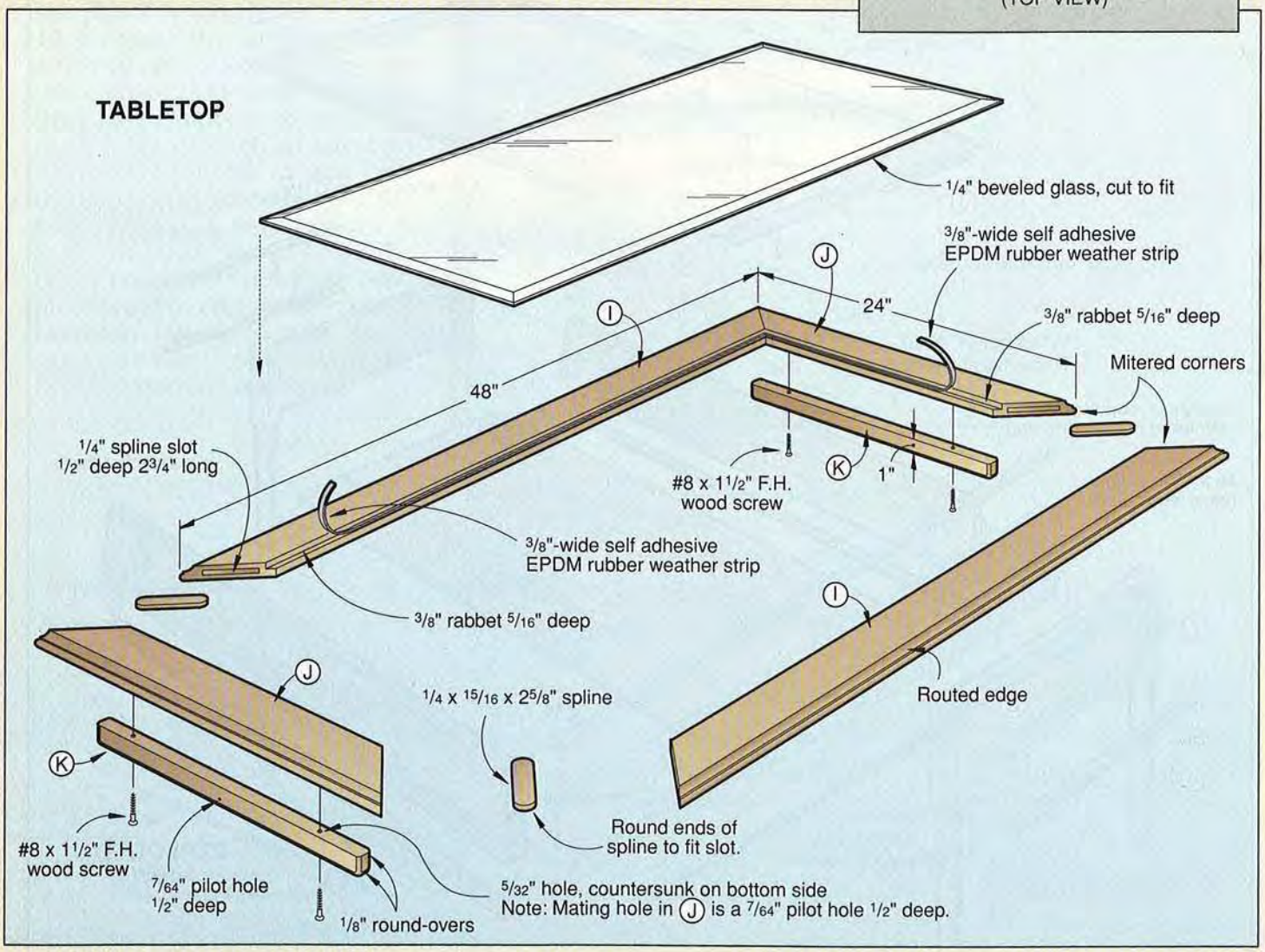
Let's showcase the base with a top

1 Cut the tabletop pieces (I, J) to width plus 1" in length.

2 To provide a cushion for the glass in the tabletop rabbet, we used Dennis brand EPDM brown rubber 7/32"-thick by ⅜"-wide weather strip. See the Buying Guide for a source. *To ensure that the top of the glass will sit flush with or slightly below the top of the tabletop after assembly, test-rout a rabbet in scrap stock first*



SPLINE DETAIL
(TOP VIEW)


TABLETOP
1/4" beveled glass, cut to fit
3/8"-wide self adhesive EPDM rubber weather strip
J
24"
I
3/8" rabbet 5/16" deep
Mitered corners
48"
1/4" spline slot 1/2" deep 2 3/4" long
#8 x 1 1/2" F.H. wood screw
K
1"
3/8"-wide self adhesive EPDM rubber weather strip
3/8" rabbet 5/16" deep
I
J
1/4 x 15/16 x 2 5/8" spline
Routed edge
K
#8 x 1 1/2" F.H. wood screw
7/64" pilot hole 1/2" deep
Round ends of spline to fit slot.
5/32" hole, countersunk on bottom side
Note: Mating hole in (J) is a 7/64" pilot hole 1/2" deep.
1/8" round-overs

to verify the depth of cut for a proper fit of the weather strip and the ¼" glass. Then, cut a ⅜"-wide rabbet to the verified depth along the top inside edge of each tabletop piece.

3 Following the instructions on Routing the Tabletop Edge drawing, rout the outside edge of each tabletop piece.

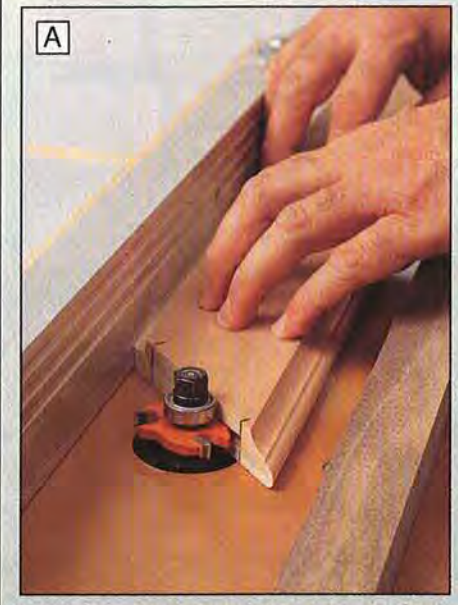
4 Miter-cut tabletop pieces (I, J) to length. *Test-cut scrap first to verify an accurate 45° setting.*

5 To rout the spline slots in the ends of the tabletop pieces, mark the 2¾"-long spline slot location on a piece of miter-cut scrap stock where dimensioned on the Spline detail accompanying the Tabletop drawing. Now, using a double-fence system as shown in Photo A, push the scrap stock along the router fence and into a ¼" spline-cutting bit. Rout the spline, moving the miter-cut end of the wood along the cutter and into the auxiliary fence as shown in Photo B. Adjust the fences as necessary for an accurate spline slot location. After you've verified the fence locations with the scrap stock, cut a spline slot in each end of each tabletop piece.

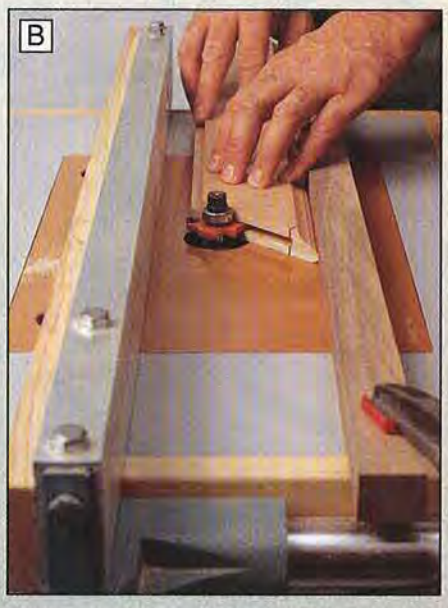
6 Cut four splines from ¼"-thick stock to the shape shown on the Tabletop drawing and accompanying Spline detail.

7 Using clamp blocks to prevent marring the routed edges, glue, spline, and clamp the tabletop (I, J) together, checking for square *and* flatness. Later, remove the clamps and sand smooth.

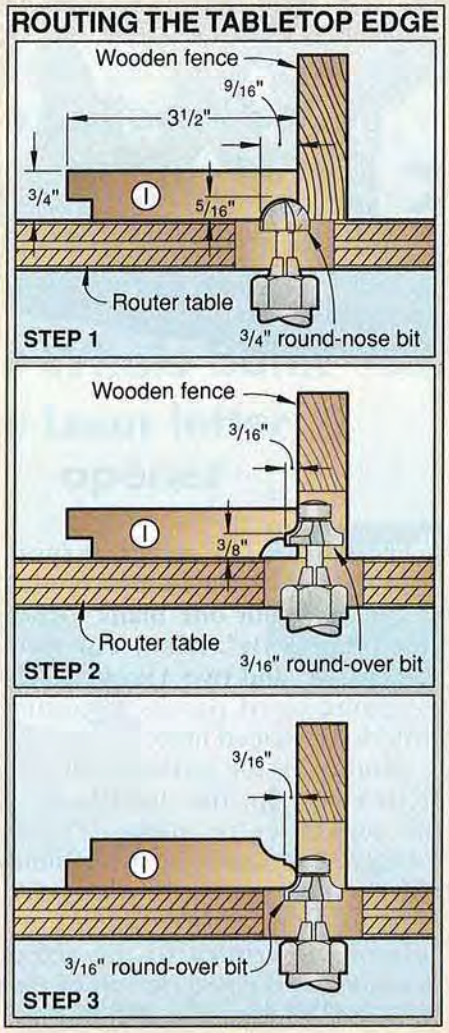
8 Cut the cherry cleats (K) to ¾×1×18$^{15}/_{16}$". Rout ⅛" round-overs along the bottom edges of each cleat. Glue and clamp the cleats in place. See the Section View detail accompanying the Exploded View for positioning particulars. Position the tabletop on the base. Use the previously drilled mounting holes in the end rails (C) as guides to drill mating pilot holes in the cleats. Drive a #8×1¼" oval-head brass wood screw through each end rail and into the mating cleat to check the fit.



Slide the miter-cut tabletop piece along the router fence and into the spline-cutting bit.



Rout across the end of the piece until it comes in contact with the auxiliary fence.



Final cleanup and finishing

1 Remove the tabletop from the base. Finish-sand the base and tabletop.

2 Apply finish to both assemblies. (Since cherry naturally darkens with age, we left it unstained.)

3 Cut strips of weather strip to length, and cut them to fit onto the shoulder of the rabbet used to house the glass. See the Tabletop drawing for reference. Now, have a piece of ¼" glass cut to fit the opening. (To do this, we cut a piece of ¼" hardboard to fit the rabbeted opening, took the hardboard template to a local glass shop and had them cut the glass to the same size as the template. We also had the glass beveled.)

4 Fill the top of the base with your favorite collection. Position the tabletop on the base. Drive a brass screw through each end rail to secure the tabletop to the base. Finally, install the glass, and call the neighbors over for coffee, served, of course, on your new showcase table.

Written by Marlen Kemmet
Project Design: Don Mostrom
Photographs: Studio Au
Illustrations: Kim Downing

BIG TOP

Scrollsaw a three-ring circus

Don't run away to join the circus—put on your own three-ring spectacular with these phenomenal patterns. You'll amaze folks with dazzling feats of scrollsawyery! They'll applaud as you bring out the elephant! They'll gasp as you perform delicate cuts on the high wire! They'll cheer as you parade a prancing pony into the big top! And after all that, you'll still be home for dinner.

1 From ⅛"-thick material (you could use 5/32" Baltic-birch plywood, too), cut one blank 7×14" and one 3×3½". Also, cut two pieces 2×4" and two 1½×3". Stack the same-sized pieces together with double-faced tape.

2 Photocopy the patterns for the arched big top, the poodles, and the seal (they're in the *WOOD PATTERNS™* insert in the middle of the magazine). With spray adhesive or rubber cement, adhere the copies to the sized stock. Place the seal on top of the two 2×4" pieces, the sitting poodle on the other stacked pair. Stick the other two poodle patterns to the remaining blank.

3 Begin cutting with the largest part, the big-top extravaganza. First, drill ⅛" blade start holes in the background areas to be cut away, indicated by ×'s. Then, drill holes where shown for the eyes, buttons, and other details.

4 Using a #4 scrollsaw blade (.035×.015", with 15 teeth per inch), saw the interior detail lines. Then, cut away the background areas. Notice that some of the cutting lines extend into the design,

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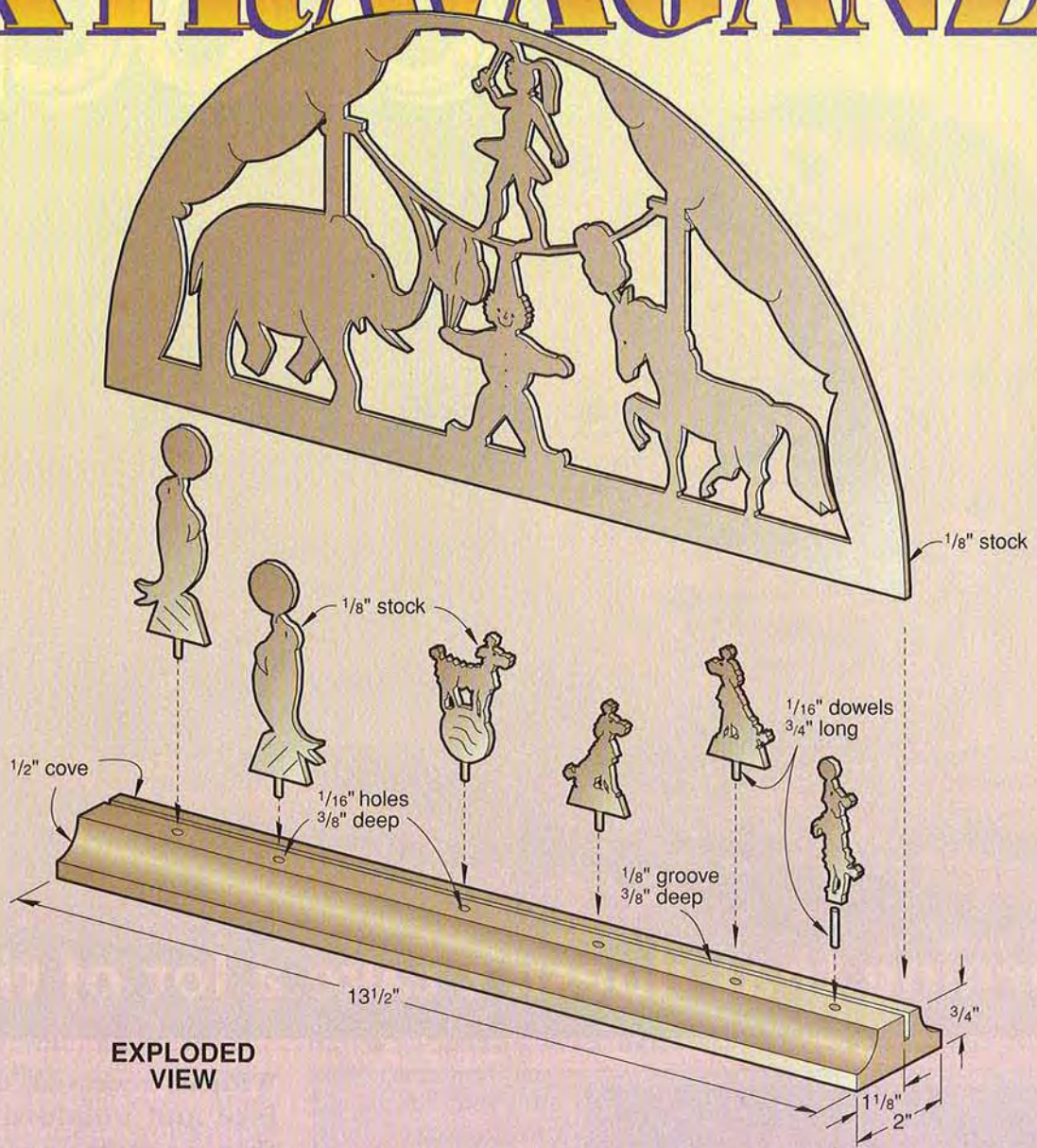
EXTRAVAGANZA



EXPLODED VIEW

then stop. Saw into each of these lines in turn, stop at the end, then back the blade out along the saw kerf to continue cutting. After you complete the inside cutting, saw around the outside pattern line.

5 Next, cut out the individual animal figures. Again, start with the interior cuts, such as the lines on the seals' pedestals and the poodle's ball. Continue by cutting away the background between the poodles' legs. Complete each animal figure by cutting around the outside pattern line.

6 For the base, cut a ¾×2×13½" piece of hardwood (we used maple). Adjust your tablesaw blade to ⅜" cutting depth. Refer to the Exploded View drawing, then saw a blade kerf into the base's top surface 1⅛" from the front edge. Test-fit the circus scene in the groove—it should fit snugly. If not, move the rip fence slightly to widen the groove.

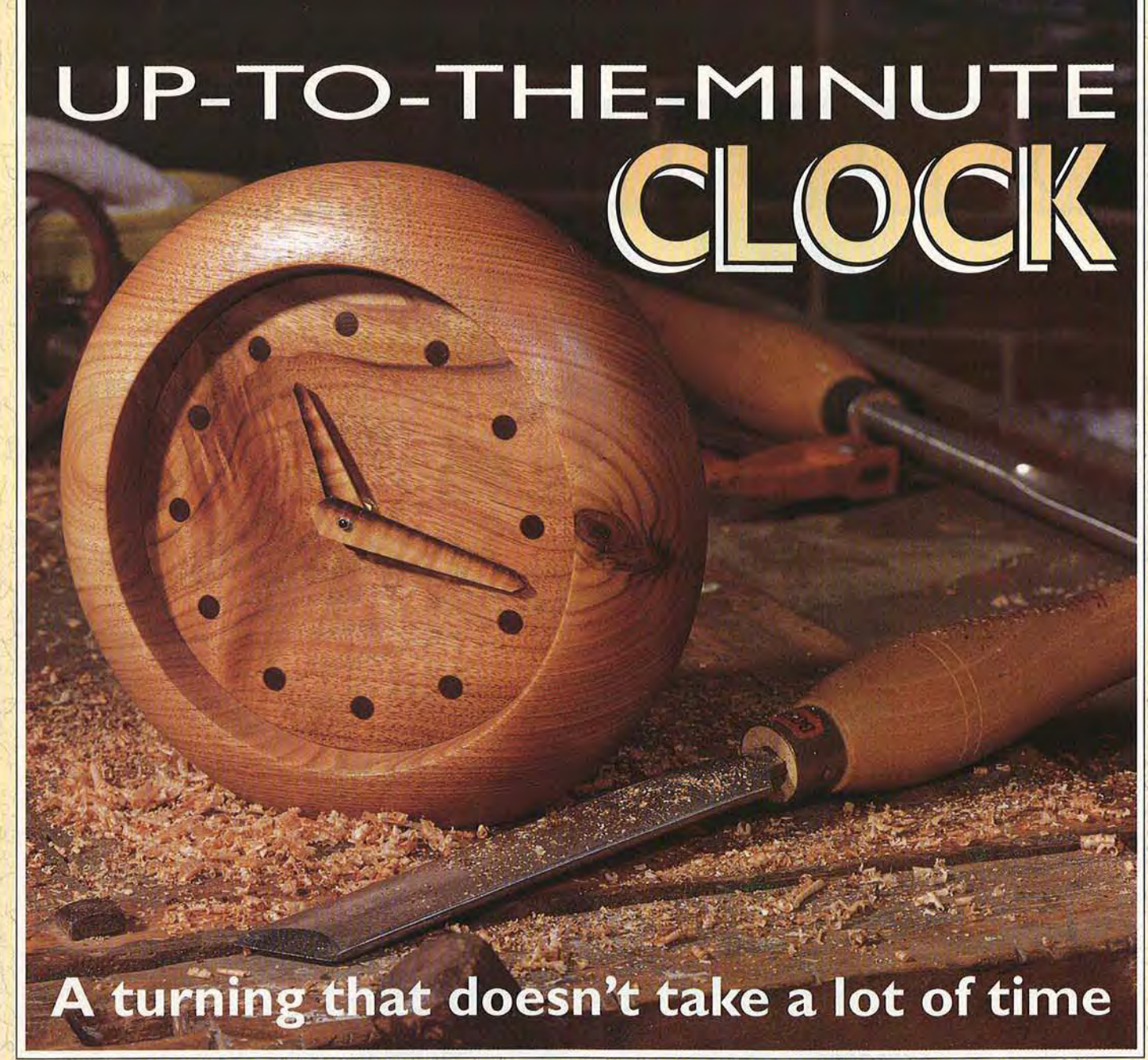
7 With a table-mounted router, form a ½" cove along the front and back edges where shown. Sand the base.

8 Drill 1/16" mounting holes for the performing animals where shown in the Exploded View drawing. Then, carefully drill a 1/16" hole in the bottom of each animal cutout.

9 Using a piece of a toothpick, a snipped-off brad, or a piece of wire as a dowel, glue each animal into position in front of the big top. Glue the big-top cutout into the groove. After the glue dries, apply your favorite finish.

Project Design: © Christl Iausly
Illustrations: Lorna Johnson
Photograph: John Hetherington

UP-TO-THE-MINUTE CLOCK



A turning that doesn't take a lot of time

With its recessed, contoured face and unadorned lines, this contemporary clock casts wood grain in a starring role. You'll earn top billing in this production, too, just by following our easy directions.

Project prep

Stock: 2½×7¼×7¼" for body, ¾×6×6" for face. Use the domestic or exotic hardwood of your choice. Body and face can be different species.

Lathe equipment: 3-4" faceplate.

Tools: ½" gouge, 1" round-nose scraper, 3/16" parting tool.

Lathe speeds: Roughing, 800-1000 rpm; finishing and sanding, 1200-1500 rpm.

Buying guide

Clock movement and hands. Quartz movement with three metal hands and mounting hardware, kit no. 6402, $7.95 ppd. in U.S., Turncraft Clocks, P.O. Box 100, Mound, MN 55364-0100, or call 800/544-1711 to order.

Begin with the body

Screw a ¾"-thick scrapwood disc to your lathe's 3-4" faceplate. Turn this wooden auxiliary faceplate to the diameter of the metal faceplate, and true the face with a scraper. Dismount the assembly from the lathe.

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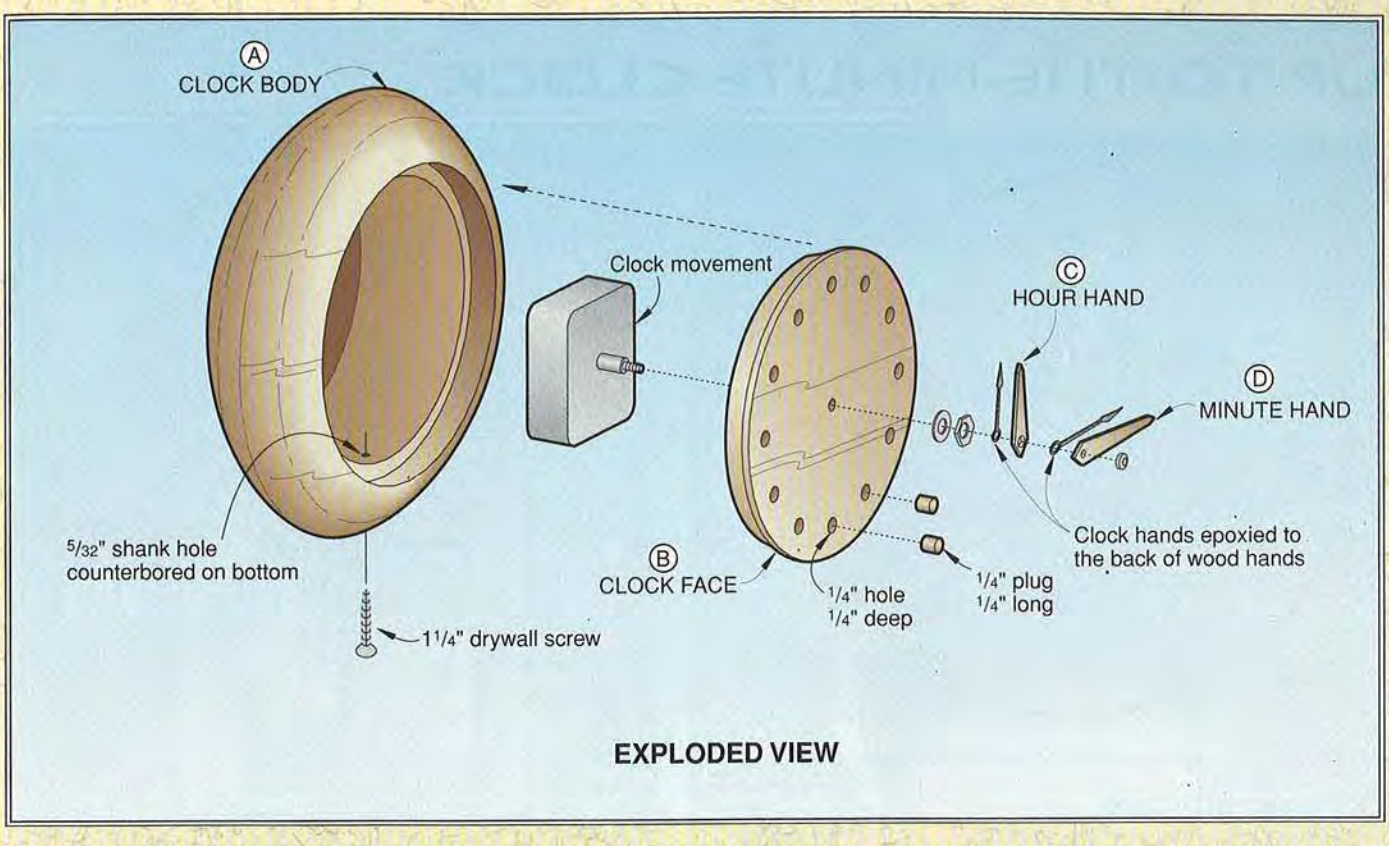


EXPLODED VIEW

Sand or plane smooth the back of a 2½×7¼×7¼" piece of stock (butternut shown *opposite page*, sycamore in how-to photos). On the back, draw diagonal lines to locate the center. With a compass, draw around the center a 7¼" circle (or the largest possible) and another the diameter of your auxiliary faceplate.

Bandsaw around the outside line to cut out the blank. Glue the auxiliary faceplate to the back of the bandsawn blank, centering it inside the circle. Either woodworker's yellow glue or cyanoacrylate adhesive will work. After the glue has dried, mount the faceplate on the lathe.

Round down the stock to 7" diameter. This is not a critical dimension, so if your blank ends up slightly smaller, don't worry. Turn the blank to 2¼" thick.

Refer to the Full-Sized Section View drawing on the *next page*, then form the edge profile shown at the top of the body (Part A). To keep the corner curvatures the same on the front and back, draw limit lines on the blank's front and back. Here's how: On each face of the blank, measure 1⅛" in from the edge. Then, with the lathe running, hold a pencil against the mark to draw a circle on the blank. Similarly, draw a centerline around the blank's edge.

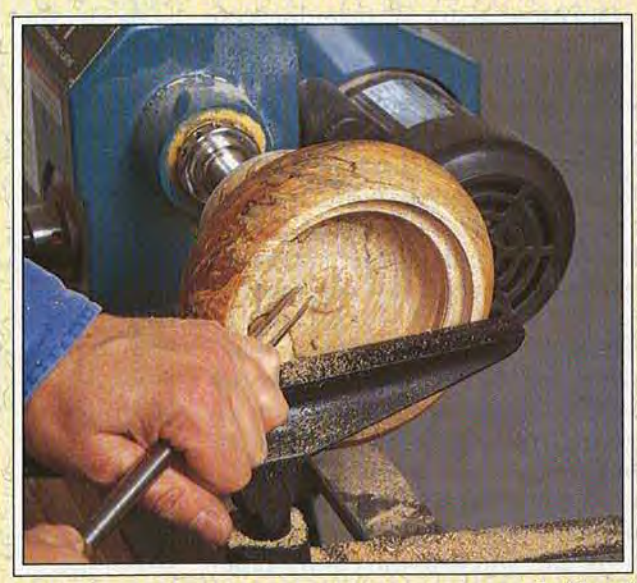
Shape the curved corner on one side first, cutting with the gouge from the centerline on the edge down to the limit line on the face. Then, match that curvature on the other side. To match the curves accurately, cut a cardboard template of the first corner to aid in turning the other.

Make room for the clock

Now, turn the opening for the face and clock movement. Start by marking a 5"-diameter circle on the blank's face. With the parting tool, cut straight in just inside the line to a depth of ½". Then, with the gouge, clear the waste from the recess.

Scribe a 4½"-diameter circle inside the recess. Mark your gouge 1¼" from the business end (a piece of tape around the shaft will do the trick), then bore into the center of the recess to the mark. Hollow out the turning inside the 4½" circle to that depth, creating an opening with a rabbeted edge, as shown *below*.

Sand the body front and edge with progressively finer sandpapers to 220-grit. Sand the side of the rabbet, too—it will show after assembly. Part off the body, and set it aside for the time being. Then, take a light cut on the auxiliary faceplate to remove glue traces and true the face.



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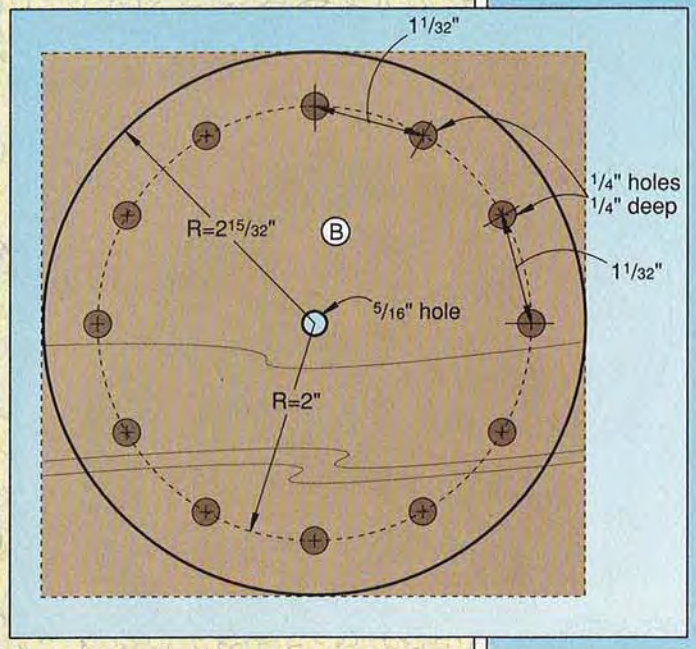
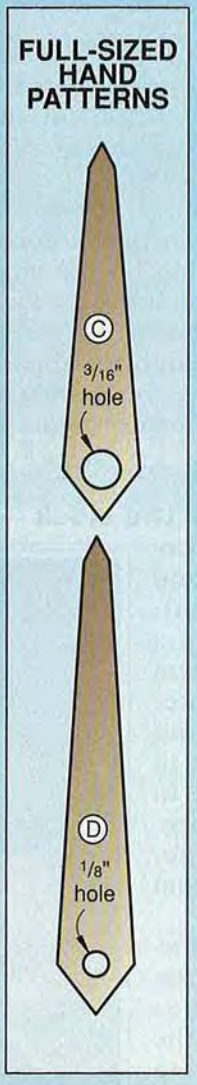
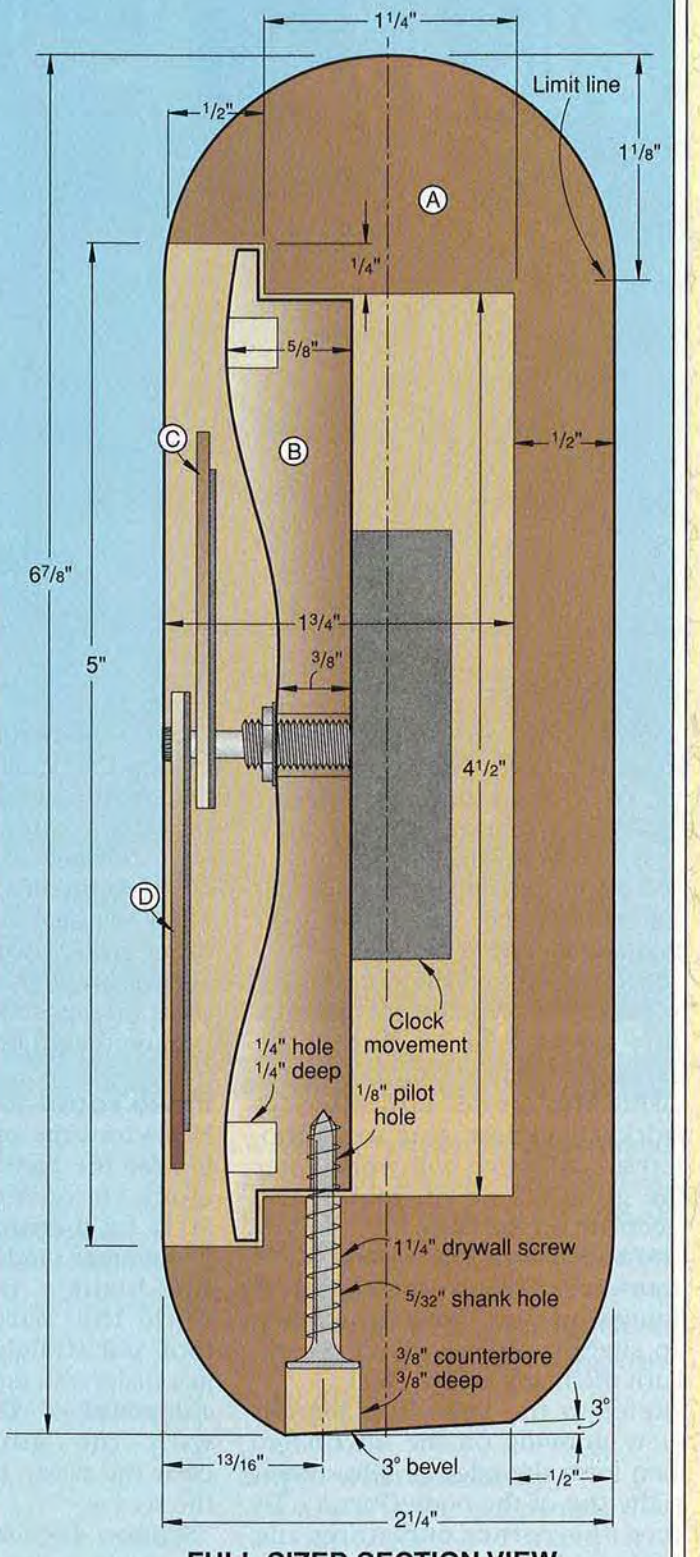
UP-TO-THE-MINUTE CLOCK







FULL-SIZED SECTION VIEW

Make a pretty face

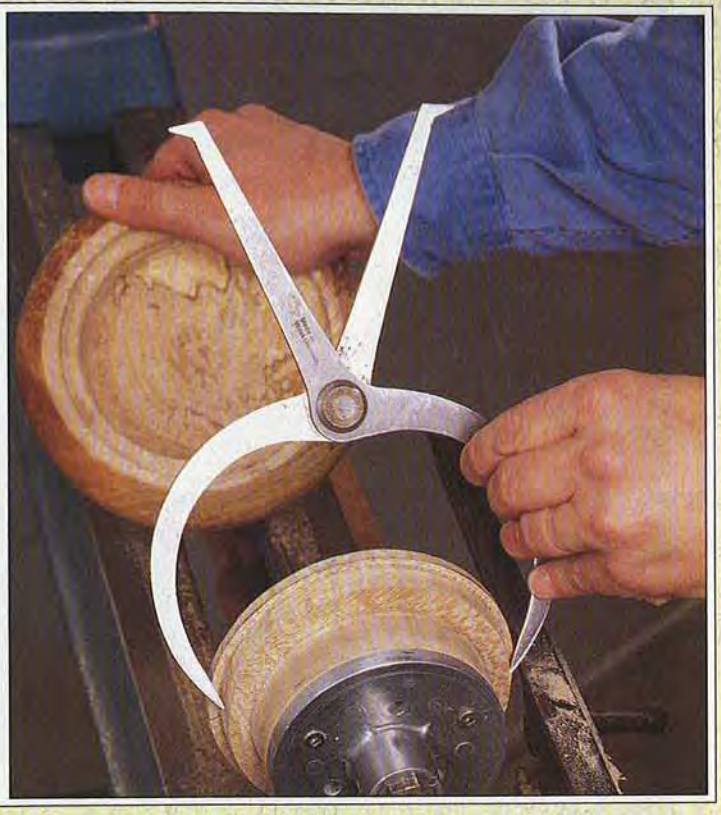
Find the center on the back of the ¾×6×6" stock for the clock face (B). Draw a 6" circle and a smaller circle for the auxiliary faceplate, as you did for the body mounting. Similarly, bandsaw the face blank, then glue it to the auxiliary faceplate. Round the blank to about 5½" diameter.

With the lathe running, locate the center of the face with a pencil. Then, with a corner of the parting tool, make a small center mark to help you drill a hole through the face later. With the lathe running, hold a pencil against the blank, 2" from the center. Remove the blank and faceplate from the lathe.

The pencil line will be the circle shown as a dotted line in the Clock Face drawing *above*. Following that drawing, lay out the marker locations. Arrange them so the grain runs horizontally across the face, not at an angle.

Drill a baker's dozen holes

Grip the faceplate with a handscrew clamp, and set it flat on your drill-press table. With a ¼" brad-point bit, drill ¼" deep at each hour-marker spot, as shown *opposite page, top left*. Change to a 5/16" bit, and drill the center hole.



Glue a ¼" length of dowel stock into each marker hole. Use dowels that contrast with the face, such as the walnut markers shown in our butternut clock. (Cyanoacrylate adhesive allows you to get right back to work.)

Remount the faceplate, then turn the face front to the profile shown in the Full-Sized Section View. Use a sharp gouge and take light cuts to prevent tearing out the end grain of the dowels.

Make the face's outside diameter about 1/16" smaller than the rabbet's inside diameter. Check by fitting the body over the face. Make adjustments in small increments until you get the fit right.

Then, rabbet the back of the face to fit inside the clock-body opening. Measure carefully to achieve a snug fit between the face and the body. (We used an inside-outside caliper, as shown *above right*.)

Sand the face with progressively finer grits to 220. Part off the completed face, then dismount the faceplate from the lathe.

Now, complete the body

Remove the auxiliary faceplate from the lathe faceplate. In its place, screw on a 6"-diameter scrapwood disc ¾" thick for a jam chuck. To make the jam chuck, just turn the disc to fit snugly inside the body rabbet. Give the edge a slight taper so the body will wedge on firmly. Double-faced tape or a few dabs of hot-melt glue can help hold the body.

Seat the body squarely on the jam chuck. If glue marks remain on the body's back, clean them off with a light gouge or scraper cut. Using a gouge, shape the back edge to match the front, then sand as you did the front.

Tilt your bandsaw table to 3° to cut the bottom bevel on the body. With double-faced tape, fasten the body to a 7" square of scrapwood, ¼-½" thick (a piece of plywood works well). Align the body's grain with one edge of the scrapwood carrier board. Then, with the bandsaw's miter gauge against an adjacent edge, saw the bottom from the body where shown.

Drill the ⅜" counterbore where shown, centered side-to-side on the flat base. Temporarily install the face, aligning the grain to run horizontally when the clock is standing on its base. Drill the pilot hole through the body and into the face, then enlarge the shank hole through the body. Apply your favorite finish to the body and face.

It's assembly time

Photocopy the Full-Sized Hand Patterns for the hour and minute hands, *opposite page*. Cut them from veneer, then epoxy them to the metal clock hands as shown in the Exploded View drawing.

Following the instructions packed with it, mount the clock movement on the back of the face. Install the hands, aligning them with the 12 o'clock marker. Then, install a battery in the movement, set the correct time, and place the face assembly into the clock body. Fasten the assembly with a screw through the bottom where shown.

Project Design: Mark Reschke Illustrations: Roxanne LeMoine Photographs: John Hetherington

WHALE OF

This deep-sea depository makes a great gift for any youngster just learning the value of saving for a rainy day. And building it won't bust your bank—it's made from ordinary construction lumber.

Note: You can build the whale bank out of standard softwood stock from the lumberyard. Cut the 1½"-thick parts (A, D, and F) from 2×6 material. A 4' board will be plenty long. For the ⅛" and ¼" stock, resaw and plane 1×6 lumber.

Print this article

Begin with the body

1 Photocopy the full-sized patterns in the *WOOD PATTERNS™* insert in the middle of the magazine. You'll need two copies each of the A/B and F patterns.

2 Using spray adhesive or rubber cement, attach one of the A/B patterns to a 15"-long piece of 2×6 for part A. Extend the dotted lines that mark the coin-slot sides up to the top of the stock. Then, with a try square, draw the lines across the top edge to mark the length and location of the coin slot.

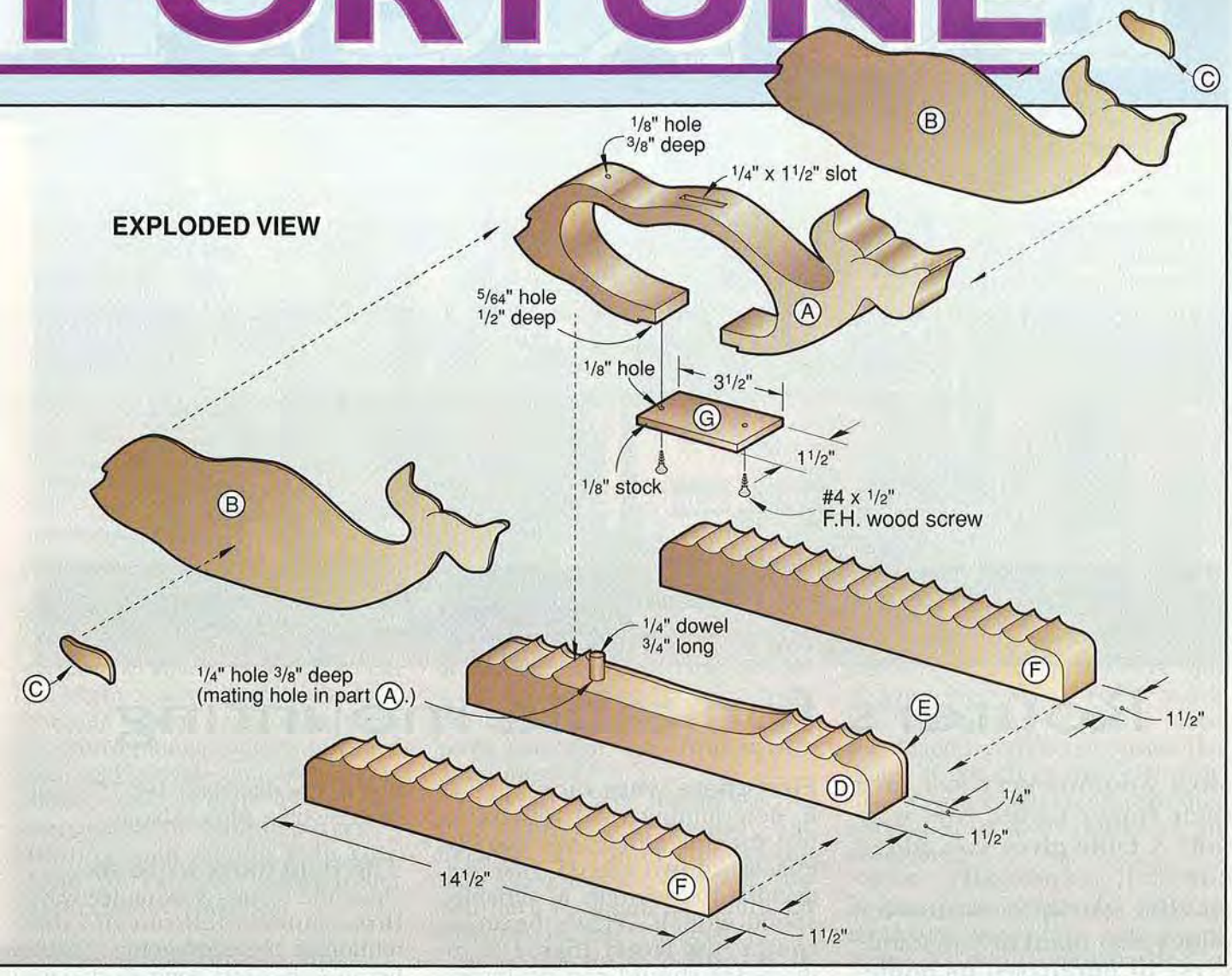
3 With a drill press, drill a series of overlapping 7/32" holes centered on the edge between the two lines. Drill deep enough to reach into the area surrounded by the broken pattern line (about 2").

4 Now, scrollsaw or bandsaw the bank's coin cavity. Starting from the bottom of the pattern, saw around the broken pattern line. Cut the thick stock with a ⅛" bandsaw blade or a no. 9 scrollsaw blade (.053×.019" with 9–13 teeth per inch). After cutting the cavity, saw around the outside line.

5 Next, cut out the body sides (B). Using double-faced tape, temporarily laminate two ⅛×5¼×15" pieces of stock, good faces out. Apply the remaining A/B pattern to the lamination, and scrollsaw around the outside line only. To scrollsaw the thinner stock, you can use a finer blade, such as a no. 4 (.035×.014" with 16 teeth per inch).

6 Glue the sides (B) to the body (A). When you clamp the sides,

FORTUNE



use 1×6 scrapwood for clamp blocks. That way, you won't inadvertently punch a clamp through the whale's thin sides.

7 Cut the ⅛×1½×3½" closure for the bottom opening. Place it in position, and drill a 5/64" hole through the cover into the body at each end. Remove the cover, and enlarge the holes through it to ⅛". Countersink them. Install the cover with two #4×½" flathead wood screws.

8 Sand the body edge flush. A strip sander, belt sander, and drum sander will all come in handy. File and sand the coin slot smooth, bringing it to ¼" wide.

9 Install a ⅛" round-over bit in your table-mounted router, and rout along the edge on both sides. In the tight areas the router can't reach, sand or file the round-overs. Finish-sand the body.

10 Temporarily laminate two pieces of ⅛"-thick stock (about 1¼×2" would be big enough) with double-faced tape. Attach the fin pattern (C) to the top of the stack. Scrollsaw the fins, and separate them. Round over the edge on one side of each by sanding. Glue the fins to the body where shown.

Build the wavy base

1 Cut three pieces of stock 1½×2×14¼" and one ¼×2×14¼". Glue the thin piece to one of the thick ones.

2 Apply the pattern for part D/E to the glued-up blank, the two part F patterns to the two remaining thick pieces. Scrollsaw the three base sections.

3 Hand- and drum-sand the waves as necessary. Glue the three pieces together, placing part D/E between the two parts F. Align the bottom edges. After the glue dries, sand the ends flush. Then, finish-sand the base.

4 Chuck a ¼" bit in your drill press, and drill the dowel hole in the base where shown. Drill slightly more than ⅜" deep. Drill a mating hole ⅜" deep in the whale.

5 Cut a ¾" length of ¼" dowel rod. Sand a chamfer on one end so the dowel will slip easily into the hole in the whale body. Glue the other end into the hole in the base. This will help keep the whale in position when it's sitting on the base.

Continued on page 90

Routers for table mounting

Most woodworkers just love their router tables. And why not? A table gives you added control, especially over smaller workpieces. Router tables also open to you a universe of purchased or homemade fences and jigs, and dust collection proves easier. But as we've discovered, many routers aren't designed to be used upside down. On the other hand, certain ones work just great in a router table. Here's the low-down on those models, as well as some tips for making them perform even better.

Print this article

First there were nine

In determining what routers to test for this article, we quickly established two criteria. First, we decided to look only at variable-speed models. That's because router bits larger than 1½" in diameter should run no faster than 18,000 rpm, and single-speed routers typically operate in a 20,000-24,000 rpm range. Today, you can buy router bits up to 3½" in diameter, and these should spin no faster than 12,000 rpm. The routers in our test have bottom-end speeds of 8,000 to 10,000 rpm, and top speeds no faster than 23,000 rpm.

Second, because of the considerable mass of large bits, and the amount of wood they remove, we decided to test only routers that draw 15 amps. These powerful models include the Bosch 1615EVS, DeWalt DW625, Freud FT2000E, Hitachi M12V, Makita 3612C, Porter-Cable models 7518 and 7539, Ryobi RE600, and Sears Craftsman 27506. With the exception of the fixed-base P-C 7518, all of these have plunge bases.

The field narrows to six

Once the testing was under way, three models fell out of contention in the early going. That's because they just don't work well when suspended upside down.

For example, the Bosch 1615EVS performs with distinction for handheld work, but you can't raise it when attached to a router table unless you assist it with one hand while turning the height-adjustment knob with your other hand. Chris Carlson of S-B Power Tool Company, the manufacturer, explained that his company is aware of the situation and plans to make a design change to remedy it. As Carlson told us, "The router-bit market has changed drastically since that router came out. Today, woodworkers are using panel-raising bits in a router table, making it do the work of a small shaper. But the 1615EVS was designed pri-

marily for handheld work such as plunge cutting of sink cutouts."

Another casualty was the Sears Craftsman model. It falls short in two areas. First, to remove its springs you must split the motor housing apart. This can prove tricky and we don't recommend trying it. (We'll explain later why you should remove the springs.) And, this router has the same type of collet system found on inexpensive Sears routers. With these machines, the collet is formed into the motor armature; if you damage the collet you'll have to replace the armature. Our contacts at Sears tell us they have a two-piece collet system on the drawing board for this model.

The Porter-Cable 7539, another fine router for handheld operation, was dropped from contention because it does not accept a height-adjustment knob. Like the one shown on *page* 59, these fit onto a plunge router's threaded rod, and provide you with a convenient and accurate way of raising a table-mounted router. By turning such a knob with your hand, you can easily raise a router in precise increments.

Three questions for the routers still in the hunt

1. Can you quickly and easily change bits? To conveniently change a bit in a table-mounted router, you should be able to get a wrench on the collet nut without removing the router from the table or crawling under the table. Two factors largely determine how easily you can do this.

First, the larger the hole in the router base, the better. This gives your wrench more maneuvering room, something that comes in handy with large-diameter bits. All of the routers in our test have sufficiently large holes, but the Porter-Cable 7518, with a 4⅝"-diameter hole, has the largest in our test by over an inch.

The P-C 7518 also came out on top with regard to the maximum height of the collet nut. The P-C nut sticks ½" above the router-table surface. (All of the routers were tested with a ⅜"-thick table insert in place of their standard base plate.)

The collet nuts on the other tested routers do not stick above the table surface, but the Hitachi nut rises to within ⅛" of the top. This proved high enough for getting a wrench on the collet nut, even with a panel-raising bit in the collet as shown *below*. The collet nut on the DeWalt DW625 only comes to within ½" of the table surface, making bit changes possible, but more complicated. With the DeWalt we had to bend its wrench as shown *below right*, to change a panel-raising bit.

In our trials we discovered that the *type* of collet system also affects how easily you can change a bit. As shown on the *next page*, the tested routers have collet systems that fall into four major groupings.

The Porter-Cable system was the most convenient to use, but because the router comes only with a ½" collet/nut assembly, you will have to spend an additional $10 or so for the ¼" assembly.

Hitachi's setup proved easy enough, but we found that tightening and loosening the collet required a greater burst of force. That's because it's the only tested collet/nut system with steeply tapered collet walls. So, tightening it is like driving a steeply tapered wedge between two objects: it goes fast if you provide powerful force. Likewise, loosening it takes a quick burst of force.

The DeWalt, Freud, Makita, and Ryobi collets require that you first loosen the nut, turn it another revolution or two, then loosen it again to pull the collet out of its tapered hole. This proved to be slightly time-consuming. Of these three, the DeWalt was our least favorite because to change between ½" and ¼" bits, you have to remove the nut completely and snap another collet into it.

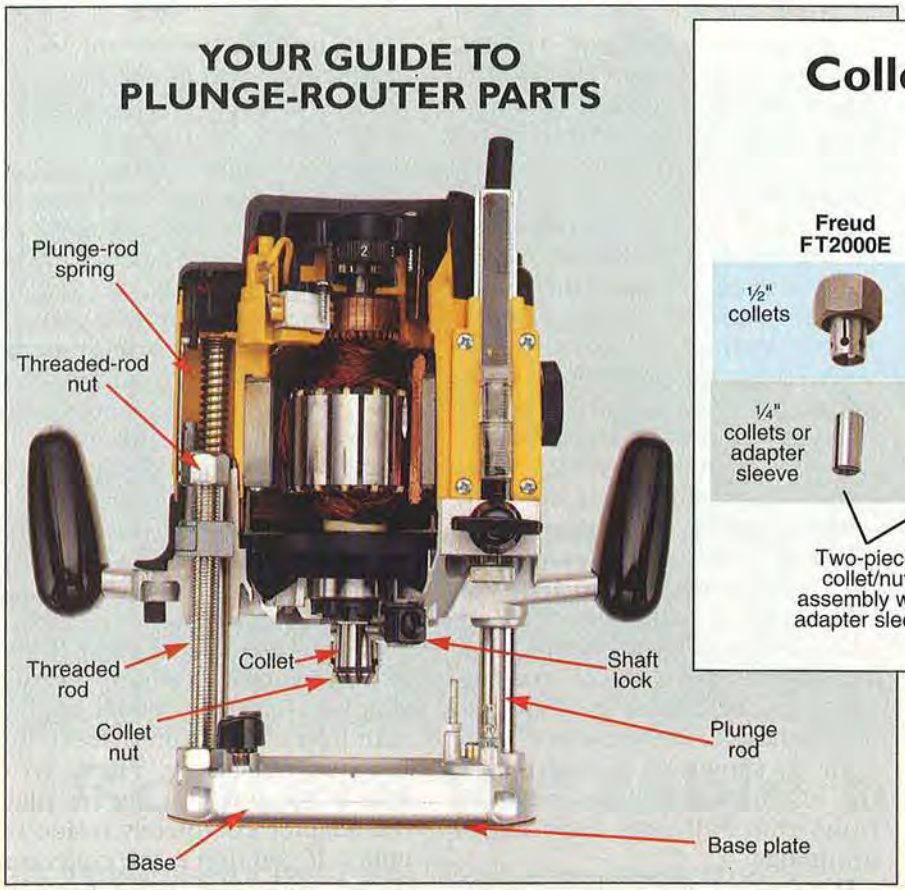
The Freud, Makita, and Ryobi, like the Hitachi, require that you simply keep the ½" collet in place and drop a ¼" adapter sleeve into it when necessary. These work fine as long as you always place the adapter completely inside the collet. If you don't, the collet may distort under tightening pressure. (Freud sells a ¼" collet as an accessory.)

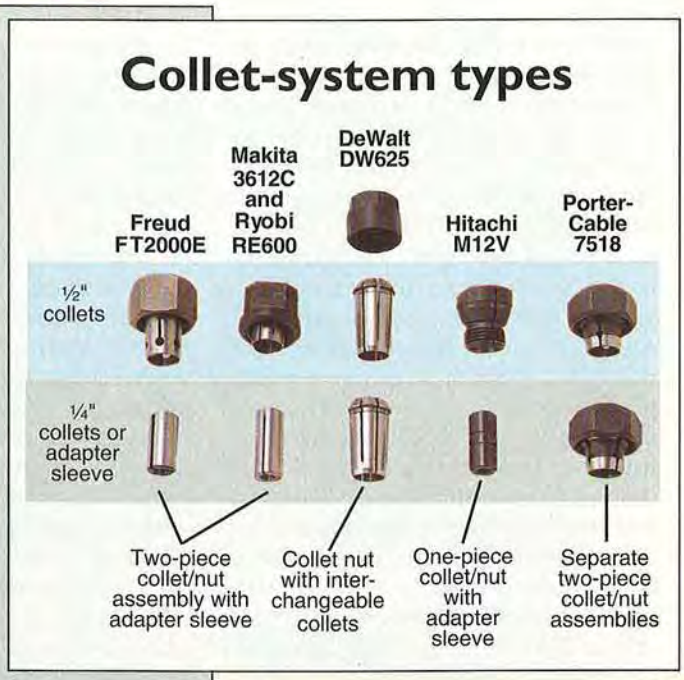
2. Can you raise the router without wearing out your arm? As mentioned earlier, a height-adjustment knob is essential for raising a table-mounted plunge router. Fortunately, the

Continued

The collet nut on the Hitachi M12V (left) comes to within ⅛" of the top of a ⅜"-thick router-table plate, making it simple to change large-diameter router bits without removing the router from the table. To do this with the DeWalt DW625 (right), we had to bend the wrench to reach the collet that comes to within ½" of the top.

BEST OF THE BUNCH





Freud, Makita, and Ryobi routers include one as standard equipment with each router.

Even with such a knob in place, you'll appreciate a router that smoothly slides on its plunge rods. All of the machines were satisfactory in this regard, but the DeWalt was easily the smoothest.

Although the springs housed inside the plunge rods serve an essential function when you handhold a plunge router (they return the motor and bit to their full upright height after a plunge cut), they serve no useful purpose in a table-mounted router. In fact, they just make it harder for you to raise the router. So, we removed all of them from the tested plunge routers as shown in the photo *right*. To do this, you simply remove the threaded-rod nut or height-adjustment knob and take the motor housing off of the rods. Doing this proved easy on all of the six finalist plunge routers.

3. Does the router maintain consistent speed under load? All of the tested routers have circuitry that senses additional motor load (caused by a heavy cut in hard stock, for example), and ups the current to the motor to maintain consistent speed. So, when you start a heavy cut, the motor will slow down momentarily, but then quickly "recover" to its speed prior to starting the cut.

All of the finalist routers performed well in this area except for the P-C 7518. While the other machines recovered their speed almost immediately, the P-C router took a second or two when running at speeds less than 15,000 rpm. One or two seconds may not seem like much of a delay (and it isn't), but it proved annoying in our tests. Of the other finalist machines, the Hitachi M12V and Makita 3612C recovered quickest, with almost no perceptible delay at any speed.

You can raise a table-mounted plunge router with greater ease by removing the springs inside of the plunge rods.

More points to consider

• ***Noise.*** Although all routers are inherently loud, we found that the Hitachi and Makita models were less irritating to our ears than the other tested machines. The loudest tested router, the P-C 7518, produced a whine that was noticeably louder than the others.

Note: *We recommend you wear hearing protection when operating any router.*

• ***Runout.*** This is a measure of how much a router bit deviates from a perfectly concentric orbit when placed in a router. Routers

Continued

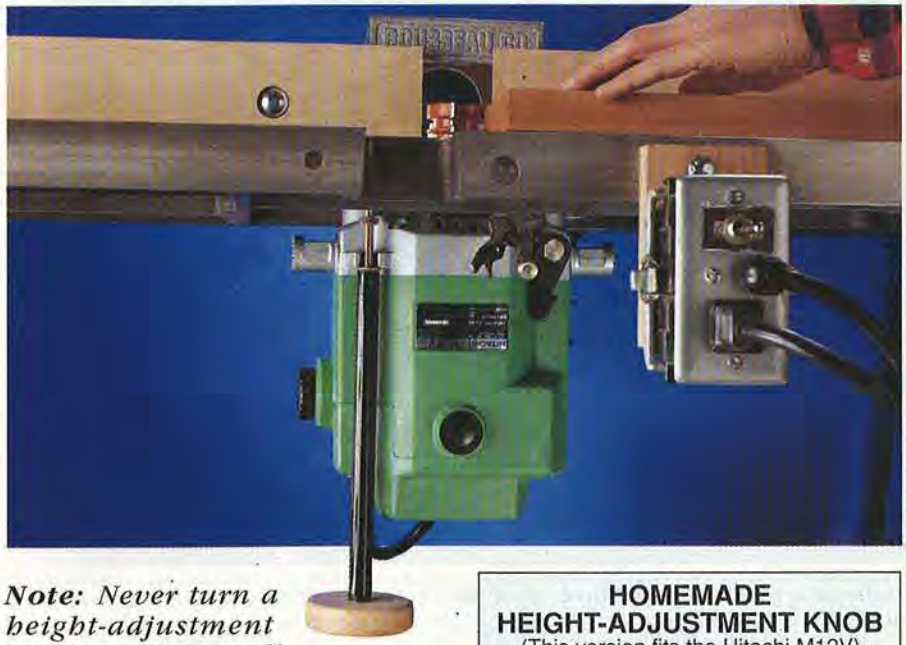
One man's ultimate router table

In the course of trying out the routers in this article, tool tester Bob McFarlin put together a router-table setup that comes close to matching the performance and convenience of a shaper. As shown in the photo *right*, Bob began by putting the router in the best table on today's market, a cast-iron version by Nucraft (800/624-2027). Although it cost $300, Bob has never regretted buying the model he bolted to this tablesaw top. "It's solid, rigid, heavy enough to absorb vibration, and perfectly flat," Bob says. "But I'm a tool junkie; you can build an acceptable table with $20 in particleboard and plastic laminate. Just make sure it has no flex."

Although Bob considers his Nucraft table to be a luxury item, he finds a Rousseau Deluxe Router Plate, or one like it, to be absolutely essential. As shown in the photo on the *following page*, the Rousseau product has two rings that snap into it and provide support around the base of bits up to 4" in diameter. With the smallest ring in place, you can use rub collars for template work, or remove both rings for easy wrench access to the collet nut. The Rousseau plate costs about $35. For more information call 800/635-3416.

"To make the raising process convenient and precise, I built a homemade height-adjustment knob that threads onto my router's threaded rod. Most woodworking catalogs sell these for under $20, but it was easy to make one for the Hitachi M12V (see the drawing *right*)."

The Hitachi threaded-rod nuts fit tightly inside a ½" copper pipe, but other routers have nuts of various sizes that may not fit well into available pipe or conduit. With these, you're best off buying a manufactured version.

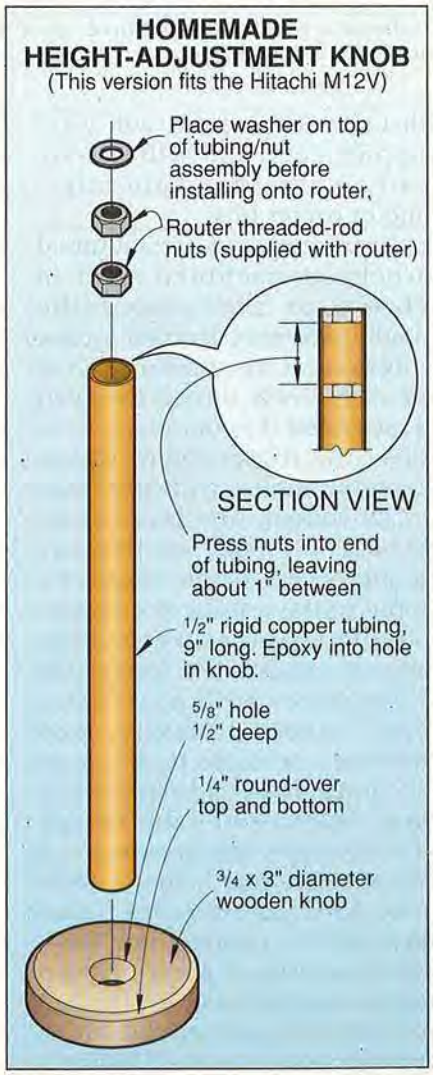


***Note:** Never turn a height-adjustment knob completely off the threaded rod of a table-mounted router. If the plunge lock is not engaged, the motor housing will separate from the base and fall to the floor.*

Next, Bob removed the handles from the router so it fits through the opening in the table. Then, he clamped a small, long-nosed, Vise Grips Locking Pliers onto the shaft lock to make it easier to reach and engage.

In choosing a fence, Bob looked for a sturdy and affordable version, and found it in the cast-aluminum Rousseau Basic Router Fence. It has a dust port, and wooden faces that adjust for router bits of various sizes (about $65). "I tapped two holes into the tabletop for holding the fence, but it was worth it," Bob said.

Finally, our intrepid tool tester added an on/off switch on the front edge of the table for convenience. "I've since discovered that the version I used isn't offered anymore, but you can buy one like it from Sears (catalog number 25060, $20.99) that has a removable locking key.


HOMEMADE
HEIGHT-ADJUSTMENT KNOB
(This version fits the Hitachi M12V)
Place washer on top of tubing/nut assembly before installing onto router.
Router threaded-rod nuts (supplied with router)
SECTION VIEW
Press nuts into end of tubing, leaving about 1" between
1/2" rigid copper tubing, 9" long. Epoxy into hole in knob.
5/8" hole 1/2" deep
1/4" round-over top and bottom
3/4 x 3" diameter wooden knob

We placed a precision-machined shaft into each router's collet and measured runout with a dial indicator.

with excessive runout will yield choppier cuts, and will vibrate greatly when they spin large-diameter router bits.

To measure runout, we mounted a precision-machined shaft in each router and placed the spring-loaded arm of a dial indicator against it as shown *above*. Then, we slowly turned the shaft and measured the runout.

All of the routers were within acceptable limits, with less than .003" of runout. The Hitachi was tops with only .0005" of runout.

In the course of our trials, we also put to the test the notion that ¼" collet-adapter sleeves contribute to runout. We found that the machines with adapters—Freud, Hitachi, Makita, and Ryobi—had no more runout with the adapters than without them.

• ***Dust collection.*** Table-mounted routers spew large amounts of sawdust above *and* below a table. So, we appreciate that the Freud comes with a clear-plastic dust-collection shroud and port that attaches to the base for under-table collection. You can buy a similar accessory for the DeWalt.

Our recommendations

You could mount any of the six "finalist" machines into a table and have good results. But, our nod goes to the Hitachi M12V and Makita 3612C because they were the only machines that scored seven "excellent" ratings in the comparison chart. The Makita has a slight edge for dedicated table use because it comes with a standard height-adjustment knob. It's the only tested router with an electric brake. We found this feature nice, but not essential. If you intend to remove the router from its table and use it for handheld work occasionally, opt for the Hitachi. Its lighter weight makes it easier to handle.

The Freud and Ryobi units come in a close second. If you can buy the Freud at a time when its manufacturer offers a $30 rebate (which happens periodically), the price of the unit dips as low as $175, making it a "10" in the value column.

Although we don't recommend the DeWalt DW625 for table mounting, it was the best of the lot for strictly handheld work.

BEST OF THE

MANUFACTURER/ IMPORTER	MODEL	NO-LOAD SPEED RANGE (RPM)	AMPS	COLLET TYPE (1)	COLLET MAXIMUM HEIGHT (2)	COLLET SPINDLE LOCK (Y, N)	BASE HOLE SIZE (INCHES)
DeWALT	DW625	8,000-22,000	15	D	-1/2	Y	2 5/8 x 3 3/8
FREUD	FT2000E	8,000-22,000	15	B	-3/8	Y	2 1/2 x 3 1/8
HITACHI	M12V	8,000-20,000	15	A	-1/8	Y	3 1/2 ROUND
MAKITA	3612C	9,000-23,000	15	B	-1/4	Y	2 5/8 ROUND
PORTER-CABLE	7518	10,000-21,000	15	C	+1/2	N	4 5/8 ROUND
RYOBI	RE600	10,000-22,000	15	B	-1/4	Y	3 3/8 ROUND

NOTES:

1. (A) One-piece, 1/2" nut/collet with 1/4" adapter sleeve.
   (B) Two-piece nut/collet assembly with 1/4" adapter sleeve.
   (C) Separate, 1/2" and 1/4" two-piece nut/collet assemblies.
   (D) Nut with interchangeable 1/2" and 1/4" collets.
2. Maximum height, in inches, of raised collet, above (+) or below (-) the top surface of a 3/8"-thick mounting plate.

Router table vs. shaper?

During the course of our testing, it occurred to us that you can spend as much money on a complete router-table system as you can on some shapers. For example, Bob McFarlin's setup on the *previous* page set him back about $650. Now, stop to consider that for that amount of money you can buy a 1½-hp Taiwanese-made shaper with a router-bit spindle, and have money left over for some bits or a mobile base.

Of course, most shapers, especially larger, domestic-made versions, cost well over $1,000. And, you can put together a router-table setup for less than $300 by making your own table and fence. With that in mind, here are some more points to consider if you're still torn between a shaper and a router table.

BUNCH

TOP ROUTERS FOR A TABLE

HEIGHT-ADJUSTMENT KNOB (3)	PERFORMANCE EVALUATION (4): EASE AND SMOOTHNESS OF RAISING ROUTER	LOCKING LEVER EFFECTIVENESS AND EASE OF USE	EASE OF REMOVING SPRINGS	SPEED CONSISTENCY UNDER LOAD	EASE OF INSTALLING AND REMOVING BITS: BITS UNDER 1½" DIAMETER	EASE OF INSTALLING AND REMOVING BITS: BITS OVER 1½" DIAMETER	COLLET RUNOUT (5)	VIBRATION (6)	NOISE (7)	OVERALL RATING (8): PERFORMANCE	OVERALL RATING (8): VALUE	WEIGHT (POUNDS)	COUNTRY OF ASSEMBLY (9)	SELLING PRICE (10)	COMMENTS	MANUFACTURER PHONE NUMBER
O	E	E	E	E	G	F	E	E	G	8	7	11¼	SW	$270*	A great handheld router. Changing large bits in a router table can prove difficult.	800/433-9258
S	E	E	E	E	G	G	G	G	G	8	9	12½	SP	205	Comes with a height-adjustment knob and dust-collection attachment for its base. A good value.	800/472-7307
O	E	E	E	E	G	G	E	E	E	10	10	11¾	SI	235	One of our top-rated routers. You will need to make or buy a height-adjustment knob.	800/706-7337
S	E	E	E	E	G	G	E	E	E	10	*	13	U	NA	One of our top-rated routers. Comes with a height-adjustment knob. Heavy for hand-held use. Only model with an electric brake.	714/522-8088
N	E	G	NOT NECESSARY	F	E	E	G	F	F	7	6	15	U	270	Would be our top choice if it recovered faster after encountering a load at slow speeds.	800/487-8665
S	E	E	E	E	G	G	E	E	G	9	9	13½	U	230	Comes with a height-adjustment knob. A good value. Bulky for hand-held use.	800/525-2579

3. (N) None needed for routers that do not have plunge mechanism.
   (O) Optional model available from dealer.
   (S) Standard item packed with router.
4. E Excellent; G Good; F Fair; P Poor
5. E Less than .002" runout; G .002-.003" runout
6. With 3½"-diameter panel-raising bit installed.
7. Determined with machine running at full, no-load speed.
   E 92 decibels; G 94 decibels; F 98 decibels
8. Based on a 1-10 scale with 10 being the highest score.
   (*) Depends on price, which was not available at press time.
9. (SI) Singapore
   (SP) Spain
   (SW) Switzerland
   (U) United States
10. Selling prices based on mail-order advertisements at time of article's production. Prices at local full-service dealers may be higher.
    (*) At time of article's production, DeWalt price included a free depth-of-control knob.
    (NA) Not available at press time.

Which makes more sense?

•Shapers come with a conveniently located on/off switch, completely adjustable fence with built-in dust collection, quick and easy-to-use height-adjustment controls, and a miter gauge.

•Most shapers have two speeds (7,000 and 10,000 rpm). We've found these speeds fast enough for all router bits except straight and rabbeting bits. With these you will experience slightly choppy cuts at 10,000 rpm.

•Most shapers have a motor-reversing switch that allows you to stack a cutter upside down on the machine's spindle. This increases the versatility of your shaper cutters.

Also, you can often increase your working safety by flipping a cutter to avoid a "captured" cut that may lead to kickback.

•Shapers make considerably less noise than routers because they have induction motors rated for continuous duty. Routers have shrill-sounding universal motors.

•A shaper takes up valuable floor space. You can stow away a benchtop router table and easily take it anywhere you go. For the ultimate in space savings, you can make a router table that's an extension of your tablesaw top.

•With a shaper you will still need a router for handheld shaping operations. But you can quickly remove a table-mounted router and use it for handheld work.

•Finally, large shapers can flat-out do heavier work than any router. For example, you'll need a shaper with a 1¼" spindle to handle big cutters that produce many large-scale, architectural profiles.

Looking to build your own router table? Here's help.

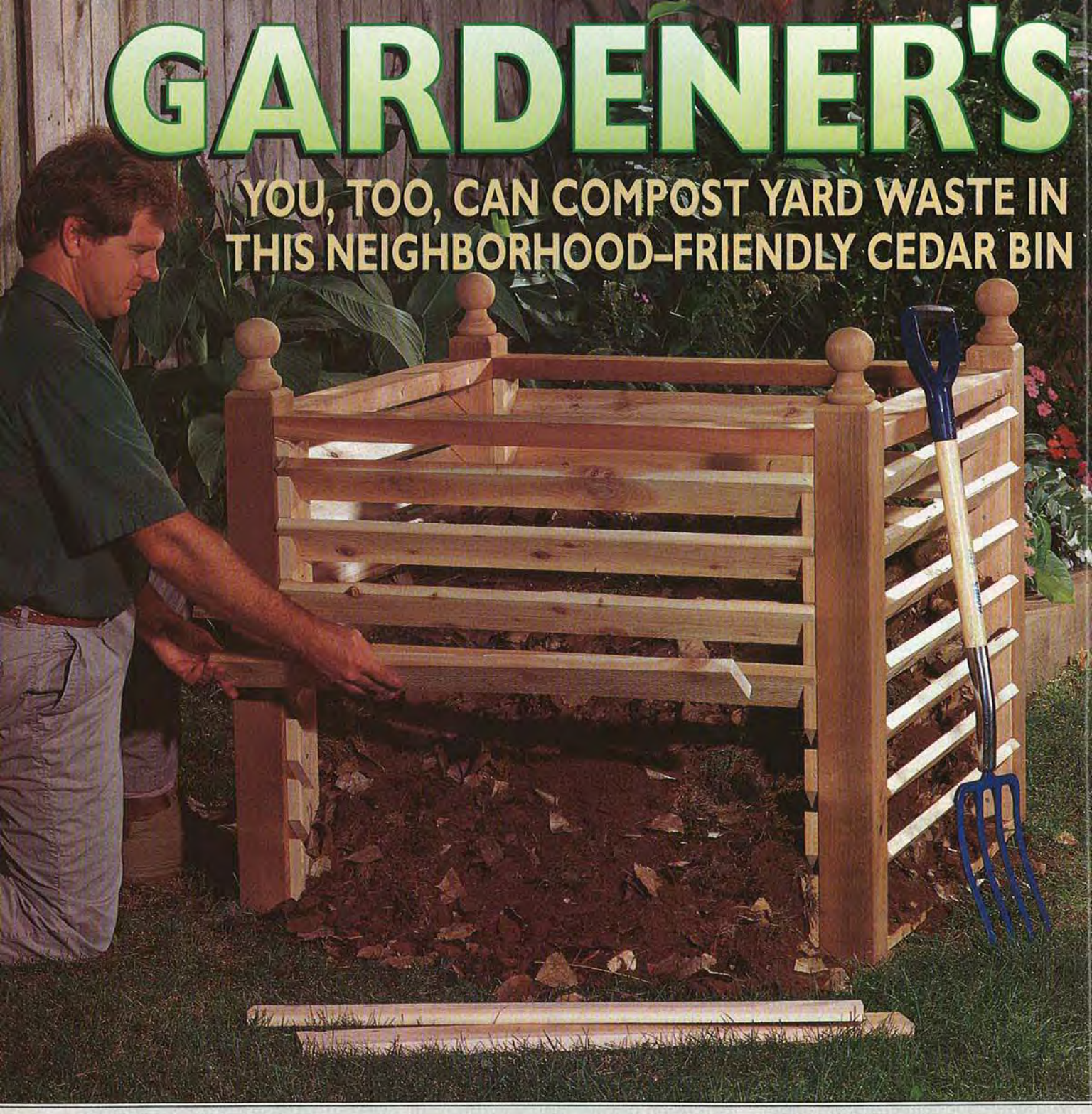
The best way to set yourself up with a dandy router table is to build one yourself. You'll save money, and you'll have some fun and probably learn a thing or two in the process of building one. No matter if you're looking for a full-featured, floor-standing router table, or a portable benchtop version, we can supply you complete, shop-tested plans. Our Benchtop Router Table and Heavy-Duty Router Table are available in large, blueprint-style plans. See page 34 for photos and complete ordering information.

Note: *The Benchtop Router Table will hold a 15-amp. router, but you may need to lengthen the legs to make room for a height-adjustment knob.*

Written by Bill Krier Product testing: Bob McFarlin Photographs: Bill Hopkins Jr., John Hetherington, DeWalt Industrial Tool Co.

GARDENER'S

YOU, TOO, CAN COMPOST YARD WASTE IN THIS NEIGHBORHOOD-FRIENDLY CEDAR BIN



COMPOST: WORTHY WASTE FOR GARDENERS

How it works. Compost piles work by generating intense heat and biological activity, breaking down the materials in the pile into rich, usable, organic matter. Commonly called "black gold," compost aids in soil aeration and drainage. It is especially good for soils with too much clay or sand.

Compost's benefits. Unlike chemical fertilizers, compost minimizes the danger of contaminating water supplies. Instead, it gives nutrients back to the soil. And, just by composting, you can do your part to help relieve overburdened landfills. Today, yard trimmings and food scraps account for 25 percent of America's municipal solid waste.

The "secret ingredients" for a rich compost. Fill your compost bin with any plant or animal product except fats, which decay very slowly. Also, avoid putting in meat, fish, or dairy products. Bacteria and fungi combine to

Print this article

GOLD MINE

Our thanks go out to *WOOD*® magazine reader Wallace Leeker for sharing this clever compost bin design with us. Note how its slats slide out for ease in turning the compost mixture, adding new materials, or removing usable compost. Note, too, that the design adapts nicely to either stationary or portable construction. (If you're not familiar with the finer points of composting, see the box below for additional information.)

Start with the corner posts and top rails

Note: *This design lends itself to two different setups, stationary and portable. For the stationary bin, cut the four corner posts to 58" long, build the unit, and bury the post ends. For a portable bin that you can relocate from time to time, cut the posts to 34" long and add the optional bottom braces (E) for rigidity. See the Exploded View and Portable Bin drawings for comparison.*

1 Crosscut the four corner posts (A) to length. (We used cedar 4×4s; pressure-treated stock also would work.)

2 For adding the decorative finials later, mark diagonals on the top end of each post to find the center. Then, drill a ¼" hole 1½" deep. See the Corner Post detail accompanying the Exploded View drawing for reference.

3 Angle-cut or rout a ⅜" chamfer along the top end of each 4×4 corner post.

4 From 2×4 stock, cut the top rails (B) to length.

5 Using the Corner Post detail for reference, drill a pair of angled mounting holes near the end of each 2×4 top rail.

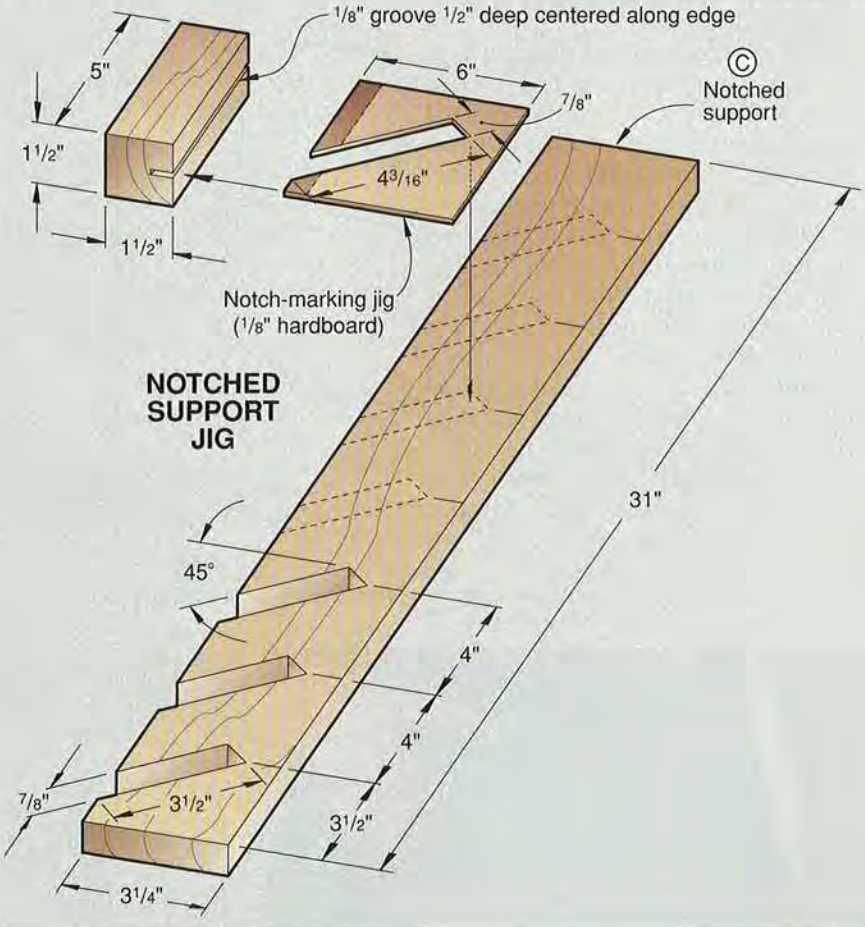
Now for the notched supports and slats

1 Cut the eight supports (C) to size from 1×4 or 1×8 stock.

2 Construct a notch-marking jig using the Notched Support Jig drawing *below* for reference.

3 Using the dimensions on the Notched Support Jig drawing, mark seven notches on each support blank (C), spacing the notches 4" apart.

Continued



break down the materials, leaving a pile about half the original size.

The decaying process works best with a mixture that's 50 to 75 percent "brown" material—dried leaves, hay-like grass, and old prunings—and 50 to 25 percent greens—recent prunings, leaves, and freshly cut grass. Shredding leaves before placing them in the pile will yield quicker results and prevent caking. Turning the pile is not absolutely necessary, but it does hasten the process by providing the bacteria with sufficient air. Turning helps to ensure that the whole pile effectively decomposes, not just the center.

Harvest time. Compost is ready to use when it's uniformly dark in color, crumbles readily, and has a clean woodsy odor. Till annually into the soil to a depth of 8" to 12". To make your own potting soil, filter the compost with a ¼" or ⅜" wire-mesh screen to filter out the large chunks.

GOLD MINE

4 Using a bandsaw or portable jigsaw, cut the notches to shape as shown in the photo *below*. For ease in removing the slats (D) later, cut the notches ⅛" wider than the thickness of the slats.

5 Cut 28 slats (D) to the size listed in the Bill of Materials.

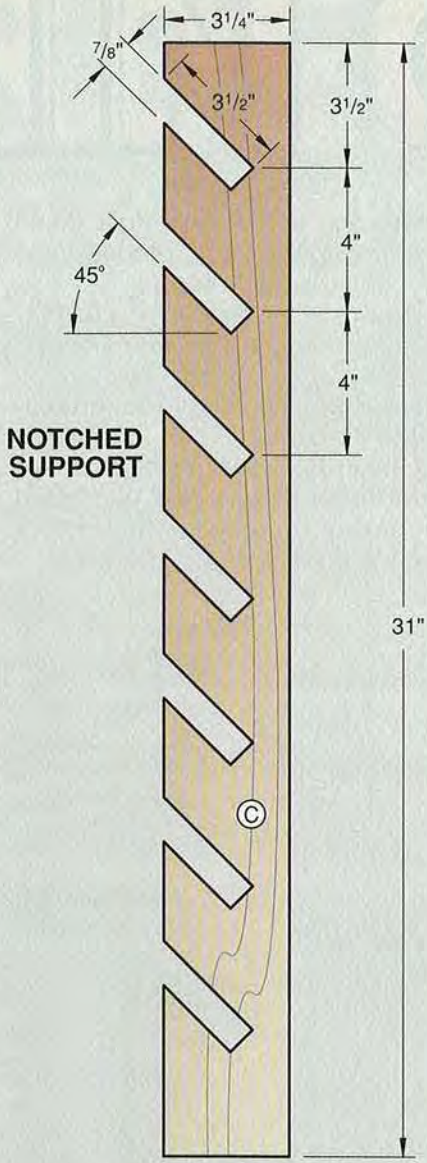
6 For a portable bin (posts not buried), miter-cut four bottom braces (E) and screw in place.

Assemble the pieces, and fill the bin

1 Using 7d galvanized nails, attach the notched supports (C) to the corner posts (A). As dimensioned on the Corner Post detail, the top ends of the supports are 3" from the top ends of the corner posts.

2 Attach the top rails (B) and optional bottom braces (E). See the Corner Post detail for reference before securing the top rails to the corner posts.

3 Slide the slats (D) in place, and fill the bin. Add the four decorative finials. (We used EMCO's cedar post top balls, stock no. CPT-1. Call 800/933-3626 for the dealer nearest you.)



Mark the angled notches on the supports with the notch-marking jig. Then, use a jigsaw to cut the notches to shape.

Bill of Materials					
Part	Finished Size			Matl.	Qty.
	T	W	L		
A* corner posts	3½"	3½"	58"	C	4
B top rails	1½"	3½"	36"	C	4
C notched supports	¾"	3¼"	31"	C	8
D slats	¾"	3½"	35⅞"	C	28
E** braces	1½"	3½"	43"	C	4

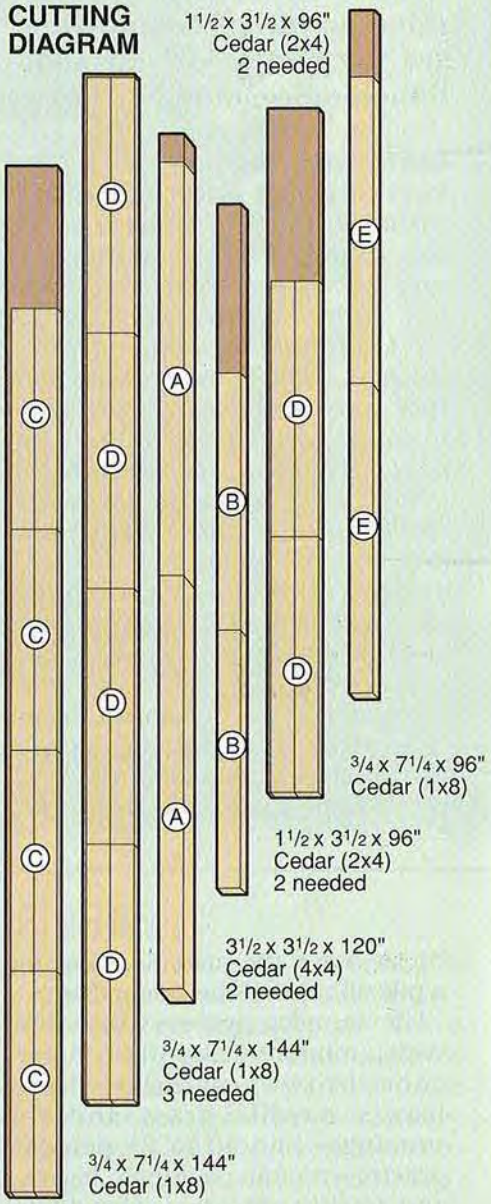
*For a stationary bin, use 58"-long corner posts; for a portable bin, use 34"-long posts.

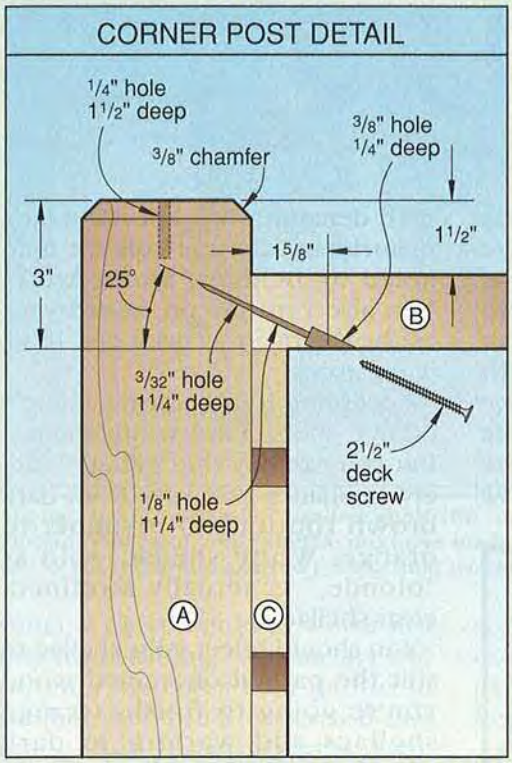
**For portable bin only.

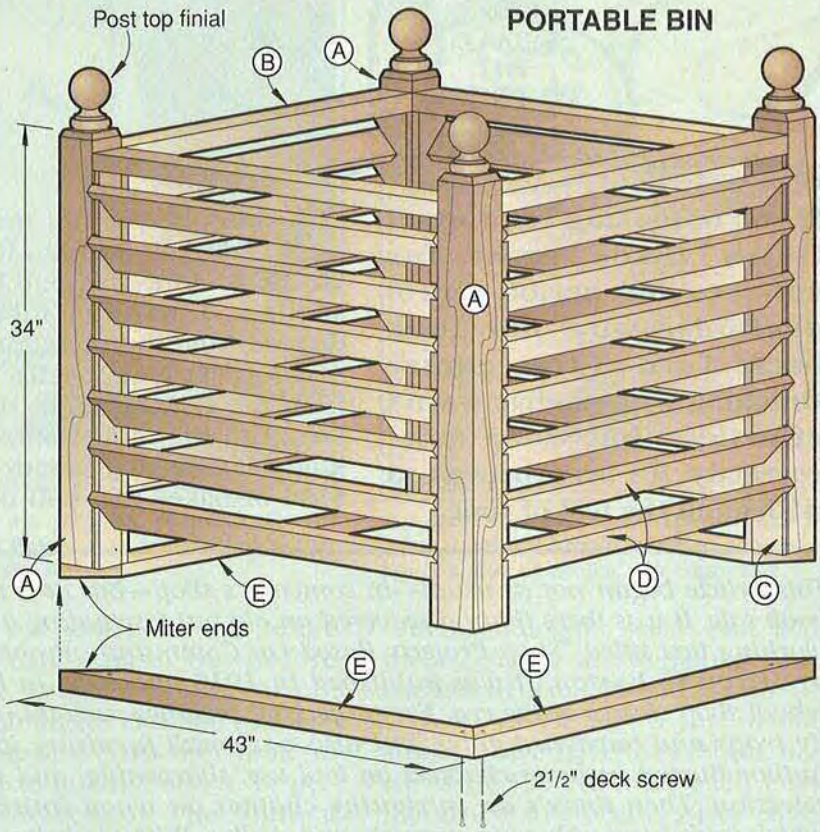
Material Key: C–cedar

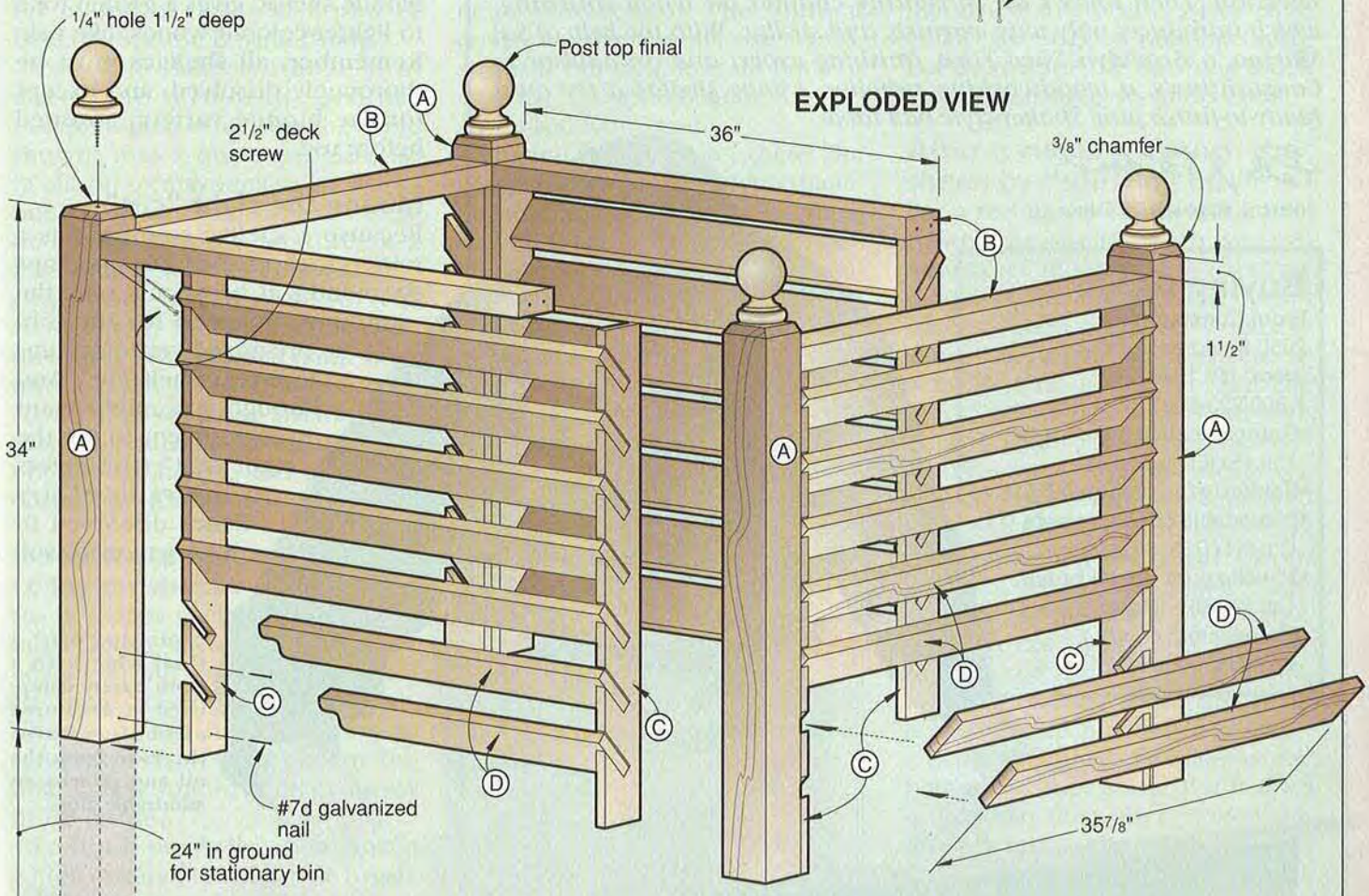
Supplies: 2½" deck screws, 7d galvanized nails, finials.

CUTTING DIAGRAM









Written by Marlen Kemmet Project Design: Wallace Leeker, Lemay, Missouri Illustrations: Roxanne LeMoine Photographs: John Hetherington

ONE OLD WAY TO A PERFECT FINISH

SHELLAC

If you're looking for a wood finish that's great for antiques and period reproductions, why not look back? Turn-of-the-century finishing with shellac wasn't effortless, but when done correctly, it's been proven to withstand the test of time.

Although the old textbook failed to mention it, there is more than one kind of shellac, a natural substance derived from the secretion of an Asian insect (see "Shellac: a gift from the insect world," on *page 96*). And the most controllable kind for finishing comes in the form of flakes that you dissolve with denatured-alcohol (Behkol, a proprietary alcohol solvent marketed by Behlens, works well). You also can buy pre-mixed shellac by the quart at paint and hardware stores.

According to Sal Marino, there's orange shellac and white shellac. But you can buy the "orange" variety in shades that vary from dark brown (buttonlac) to amber to orange. White shellac, sold as "blonde," is actually a refined, clear shellac.

You should select your shellac to suit the natural or stained wood you're going to finish. Orange shellacs add warmth to dark woods, such as walnut, while blonde shellac gives a golden tone to lighter-colored woods, like oak. Remember, all shellacs must be thoroughly dissolved, and except for the blonde variety, strained before use.

This article began not as usual—in someone's shop—but at a used-book sale. It was there that I discovered an old but fascinating woodworking text titled "Shop Projects Based On Community Problems" by Myron G. Burton. It was published in 1915 and used in high-school shop classes of the era. For projects, it includes such things as fly traps and barnyard gates, but also has small furniture items. Author Burton includes chapters on tool use, sharpening, and stock selection. Then there's an intriguing chapter on wood finishing, which introduces only wax, varnish, and shellac. With the help of Sal Marino, a Brooklyn, New York, finishing expert and an advisor to Constantine's, a woodworking supplier, I gave shellac a try on a ready-to-finish pine Shaker-style hall table.

Peter J. Stephano

—Peter J. Stephano, Sr. Editor

Print this article

Buying Guide

From Constantine,
2050 Eastchester Rd.,
Bronx, NY 10461
1-800/223-8087

- **Orange shellac flakes, 1 lb.,** Cat.#SHEL 1, $18.45
- **Behkol, qt.,** Cat.#BB803, $15.45
- **Disposable cone strainers (12),** Cat.#HYD38, $3.25
- **2"-wide pure bristle brush,** Cat.#49B61, $14.45
- **Cheesecloth (4 yds.),** Cat.#31FM72, $2.75

Mixing the right "cut"

Because a shellac solution has a relatively short shelf life—perhaps six months at best—mix only the amount you need for the job. (The pre-mixed version claims a three-year shelf life.) And although you might want to experiment to get the right "cut" (this refers to the ratio of dry flakes dissolved in one gallon of sol-

"Spiriting off," a final wipe with a cloth barely dampened in denatured alcohol, removes the haze from the oil and returns an admirable gloss.

Shellac has a somewhat limited shelf life, maybe six months, so mix only the amount you need. Most shellac mixtures made from flakes must be strained before use to get rid of undissolved residue that would mar the finish.

It takes long strokes with the grain using a natural-bristle brush to properly apply a coat of shellac. Do edges last.

vent), a two-pound cut works just fine for brushing. That means two pounds of flakes to a gallon of alcohol, but you'll never use that much. For your purposes, two-pound cut translates to one-quarter pound of flakes to a pint of Behkol. (See the Buying Guide.)

Pour the flakes (orange produced the turn-of-the-century pumpkin-pine effect on the table shown) into a quart-size glass jar (a Mason or mayonnaise jar works fine), then add the solvent. Screw on the lid. Let the mixture sit a few hours, with occasional stirring, until it's fully dissolved. Next, strain the shellac solution through a cone-shaped paint filter into a clean glass jar for storage Never mix or store shellac in a metal container because it discolors the finish. You can use metal during application, however.

It takes even passes to lay on shellac

Sal describes shellac as an evaporative finish, meaning that all the coats you put on "melt" together to form a single thick coat. Therefore, it's not necessary to sand after each coat except the first, unless you leave many messy brush tracks.

To brush on shellac, you'll need a high-quality natural-bristle brush with short bristles. This type of brush will carry a load of shellac so that you won't run out before completing a pass. But before using it, dampen the bristles in Behkol. It makes clean-up easier.

For the first coat, thin some of the shellac mixture about 50 percent with Behkol. The thinned coat effectively seals the wood, and you can sand it in an hour or so with 150-grit to knock down any raised wood grain.

Brushing shellac isn't quite like applying varnish or polyurethane. Because shellac sets up so quickly, you have to work fast, brushing in long strokes with the grain. If you're really quick, you can go back and smooth out areas of the finish. Wait too long, though, and you'll only end up with ugly brush marks. And it's really better to let any runs dry, then sand or scrape them off later.

Rubbing down the final coat of shellac with 320-grit sandpaper moistened with linseed oil ensures a smooth ending.

After sanding the sealer coat, add three coats of the two-pound cut shellac. If it takes you a pass or two to catch on to the brush stroke, you'll have to level the finish with 320-grit after each coat has dried overnight. After that, you'll have a good built-up finish, but there's still the finishing touch that Burton suggests in his book.

After a rubbing, return the sheen by "spiriting off"

For a real glossy finish, add a final rub of the shellac with 320-grit sandpaper moistened with a few drops of linseed oil. But, don't apply enough pressure to actually sand the finish down. Then, to remove the oil and return the gloss, follow that technique with what Burton calls "spiriting off." That's a pass over the shellacked wood with a cheesecloth pad barely moistened with the Behkol solvent, as shown in the photo *opposite page.* The fresh cloth must be just barely damp, though, and you can't apply any pressure at all to the surface or it will dull. Instead, quickly glide the cloth across the finish with the grain.

Working with shellac takes some patience and practice. But it dries quickly so dust isn't picked up, gives depth to the wood, rates as a great protector, and can be easily repaired. It's also non-toxic—safe for food and children's toys.

Photographs: Craig Carpenter/Studio Au

Customized SANDING

Left in the open, sandpaper will cup due to humidity. To keep this perennial problem in check and keep our sandpaper organized and away from dust, we came up with this multi-purpose cabinet for IDEA SHOP 2. See the September, 1994 issue 72 for matching cabinets. We've made room for sanding belts, a sandpaper cutter, a mini shelf for your sanding blocks, a holder for your scrapers, and clips to hold sanding discs in place.

Start with the basic cabinet assembly

1 Using the the Bill of Materials and the Cutting Diagram for reference, lay out and cut the cabinet sides (A), top and bottom (B), and door panel (C) to size from ¾" birch plywood.

2 Cut the door banding pieces (D, E) to size plus 1" in length from maple stock.

3 Rout a 1/16" chamfer along the front mating edges of the door panel (C) and banding (D, E). When joined in the next step, the chamfers form a decorative V-groove where shown on the Cabinet Exploded View drawing.

4 Miter-cut the banding pieces (D, E) to length. Glue and clamp them to the door panel (C).

5 Set your tablesaw rip fence ¼" from the inside edge of the blade, and rip edging strips (F, G) from the edge of a ¾"-thick maple board. Crosscut the edging strips to length plus 1". (We used the edging to hide the exposed plies of the plywood sides, top, and bottom panels.)

6 Glue and clamp the edging strips to the front edges of plywood pieces (A, B). Later, trim the ends of the edging flush with that of the plywood.

7 As dimensioned on the Rabbet detail accompanying the Cabinet Exploded View drawing, cut a ⅜" dado ⅜" deep ⅜" from the top and bottom ends of the cabinet sides A/F. Next, cut a ⅜" rabbet ⅜" deep along both ends of the top and bottom pieces B/G. (We test-cut scrap pieces of stock first to verify the settings.)

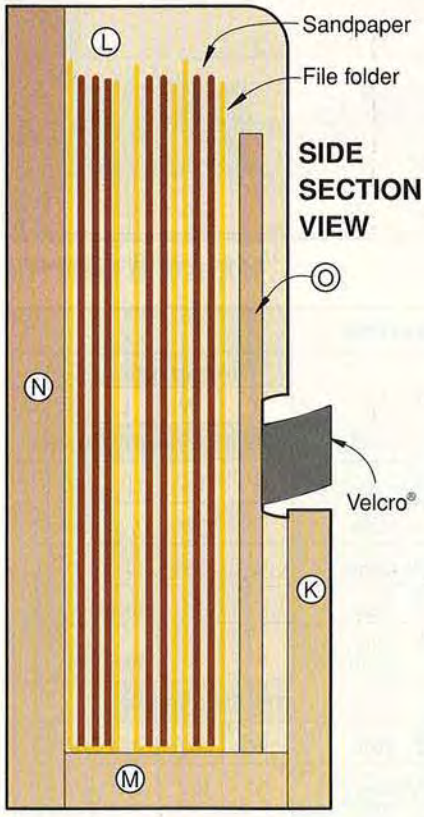
8 Glue and clamp the cabinet assembly, checking for square.

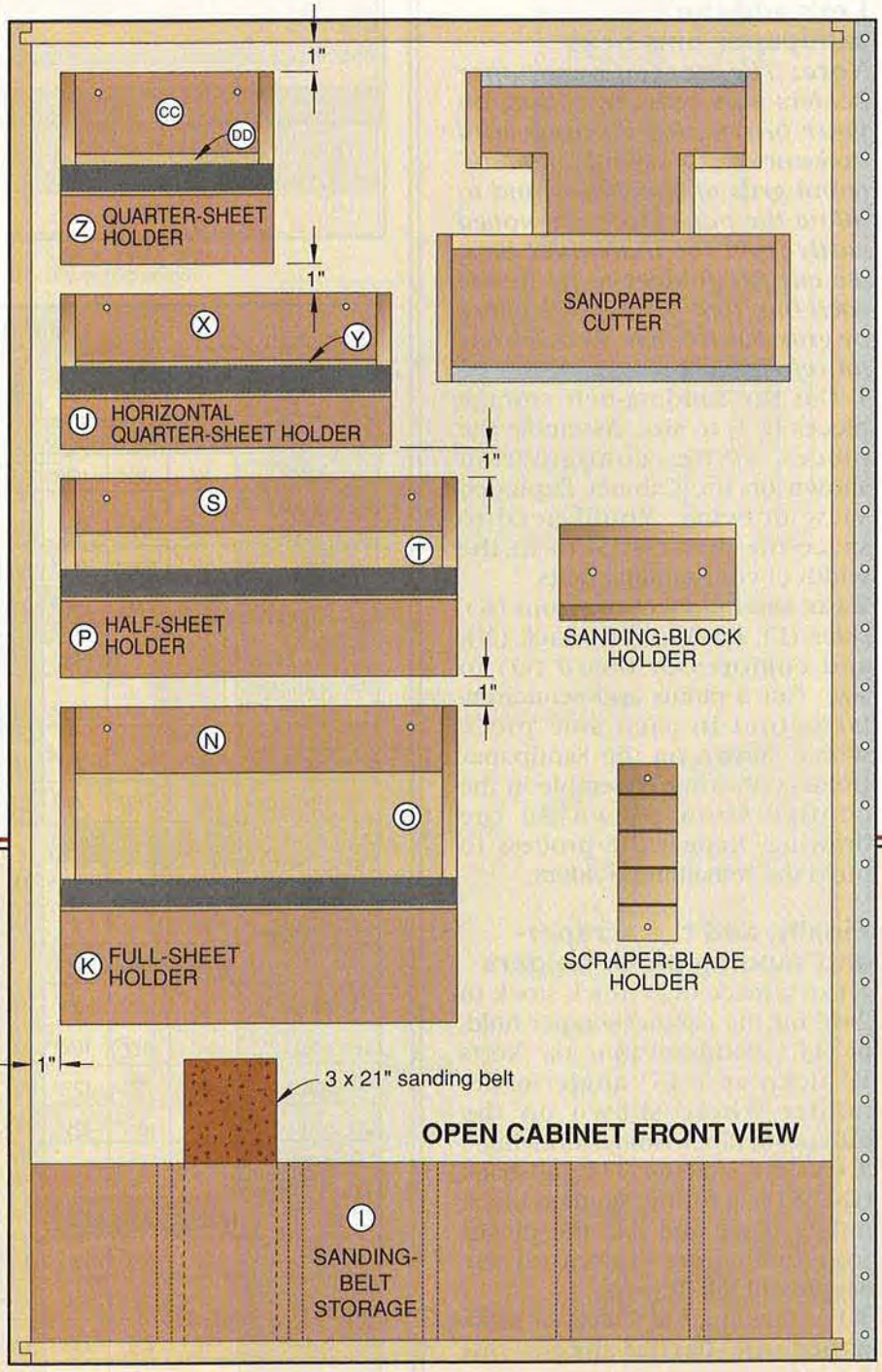
9 Measure the opening, and cut the cabinet back (H) to size. Drill counterbored mounting holes through the cabinet sides (A), and screw the back in place.

10 Use a ⅜" plug cutter to cut ⅜" plugs 5/16" long. Plug the counterbored holes in the cabinet sides, and sand the plugs flush, being careful not to sand through the birch veneer.

11 Crosscut a piece of 1½" continuous (piano) hinge to 45½" long. Using just three screws, secure the continuous hinge to the cabi-

-SUPPLY CENTER





net. Then, using three screws, attach the hinge to the back side of the door. Close the door to verify that the edges and ends are flush with those of the cabinet. (By using just a few screws, it makes it easier to adjust the hinge placement if necessary for a flush closing door.) Now, using the existing holes in the hinges as guides, drill 1/16" pilot holes into the cabinet and door. Finish attaching the hinge.

12 Locate and drill the holes, and attach a 3" wire pull to the door.

13 Mark the locations and drill a pair of mounting holes in the left-hand cabinet side for the round

Continued

magnetic catches. Install the catches, close the door, and squeeze the door against the cabinet to indent the strike locations on the back side of the door. Attach the strikes.

Let's add the sandpaper bins next

Note: *The sizes of sandpaper holders may vary depending on your particular sanders and accessories. To organize the different grits of sandpaper and to allow the paper to be removed easily from the individual bins, we cut file folders to fit inside each bin, and divided the paper by grits. See the Side Section View for reference.*

1 Cut the sanding-belt storage pieces (I, J) to size. Assemble the pieces in the configuration shown on the Cabinet Exploded View drawing. You'll need to space the dividers (J) to fit the width of your sanding belts.

2 Cut the full-sheet bin front (K), sides (L), bottom (M), back (N), and compressor board (O) to size. Cut a radius and semicircular cutout in each side piece where shown on the Sandpaper Holders drawing. Assemble in the configuration shown on the drawing. Repeat the process to build the remaining holders.

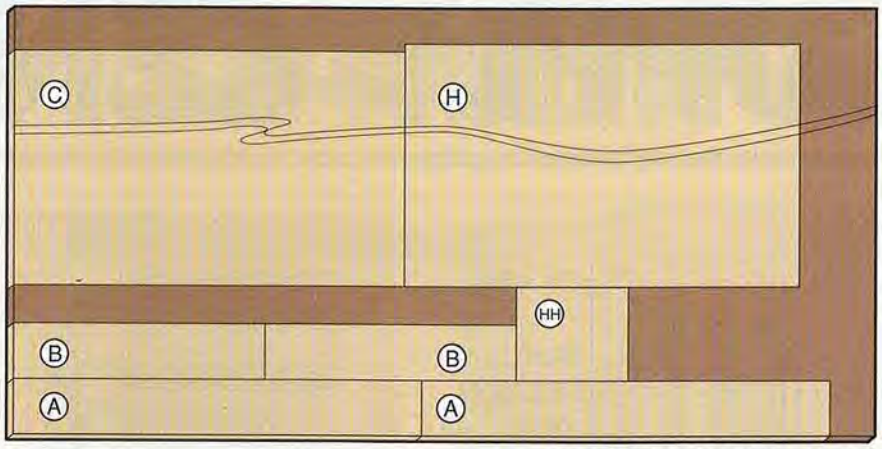
Finally, add the scraper- and sanding-block holders

1 Cut a piece of ¾"-thick stock to 2×6" for the cabinet-scraper holder (EE). Bandsaw four 1/16" kerfs ½" deep at a 45° angle in the holder where shown on the Cabinet-Scraper Holder drawing.

2 Cut the shelves (FF) and back (GG) to size for the sanding block holder. Glue and nail the pieces together where shown on the Sanding Block drawing.

3 For dividing full sheets of sandpaper into partial sheets, our

Continued



¾ x 48 x 96" Birch plywood

Bill of Materials

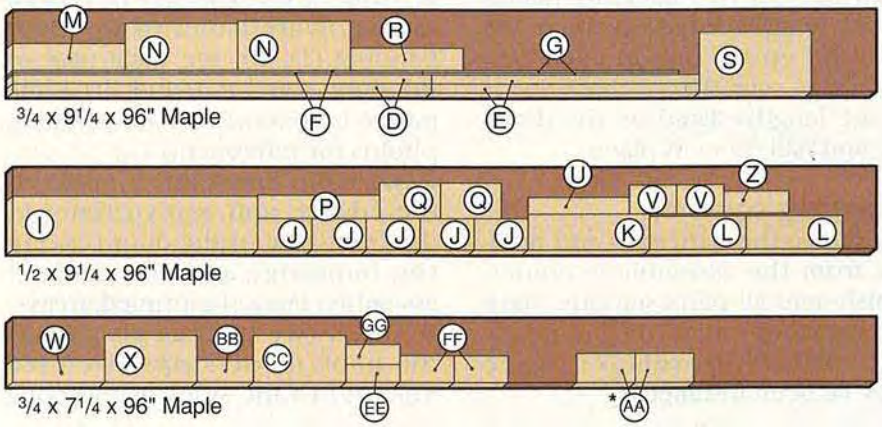
Part	Finished Size T	W	L	Matl.	Qty.
CABINET					
A sides	¾"	6¼"	45½"	BP	2
B top & bottom	¾"	6¼"	28"	BP	2
C door	¾"	26¾"	43½"	BP	1
D* side bands	¾"	1"	45½"	M	2
E* top & btm. bands	¾"	1"	28¾"	M	2
F* cab. side edging	¼"	¾"	45½"	M	2
G* cab. top & btm. edging	¼"	¾"	28"	M	2
H cab. back	¾"	27¼"	44"	BP	1
SANDING-BELT STORAGE					
I front	½"	6"	27¼"	M	1
J dividers	½"	3½"	6"	M	5
FULL-SHEET HOLDER					
K front	½"	4"	13½"	M	1
L sides	½"	3¾"	10¾"	M	2
M bottom	¾"	3"	12½"	M	1
N back	¾"	10¾"	12½"	M	1
O comp. board	¼"	9"	12⅜"	HB	1
HALF-SHEET HOLDER					
P front	½"	2⅝"	13½"	M	1
Q sides	½"	3¼"	6¾"	M	2
R bottom	¾"	2½"	12½"	M	1
S back	¾"	6¾"	12½"	M	1
T comp. board	¼"	4½"	12⅜"	HB	1

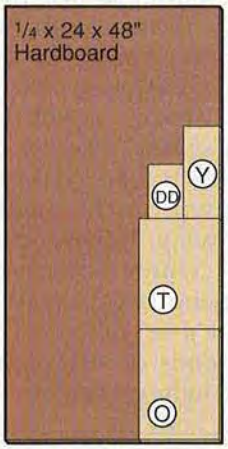
Part	Finished Size T	W	L	Matl.	Qty.
HORIZONTAL QUARTER-SHEET HOLDER					
U front	½"	1⅞"	11¼"	M	1
V sides	½"	3¼"	5¼"	M	2
W bottom	¾"	2½"	10¼"	M	1
X back	¾"	5¼"	10¼"	M	1
Y comp. board	¼"	4"	10⅛"	HB	1
QUARTER-SHEET HOLDER					
Z front	½"	2½"	7¼"	M	1
AA sides	½"	3¼"	6½"	M	2
BB bottom	¾"	2½"	6¼"	M	1
CC back	¾"	6½"	6¼"	M	1
DD comp. board	¼"	4"	6⅛"	HB	1
SCRAPER-BLADE HOLDER					
EE holder	¾"	2"	6"	M	1
SANDING-BLOCK HOLDER					
FF shelves	¾"	3"	6"	M	2
GG back	¾"	2¼"	6"	M	1
SANDPAPER CUTTER					
HH cutting board	¾"	10½"	12 1/16"	BP	1

*Initially cut parts marked with an * oversized. Then, trim each to finished sized according to the how-to instructions.

Supplies: 4d finish nails, #8×1¼" and #8×1½" flathead wood screws, 3" deck screws, 1½×45½" continuous (piano) hinge with screws, 2–⅜" round magnetic catches and strikes, 3" wire pull, primer, enamel paint, satin polyurethane, hook and loop fabric strips (we used Velcro®). For sandpaper cutter; hacksaw blades and #17×½" brads.

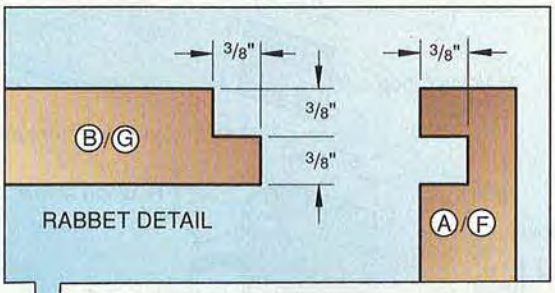
Materials Key: BP–birch plywood, M–maple, HB–hardboard.

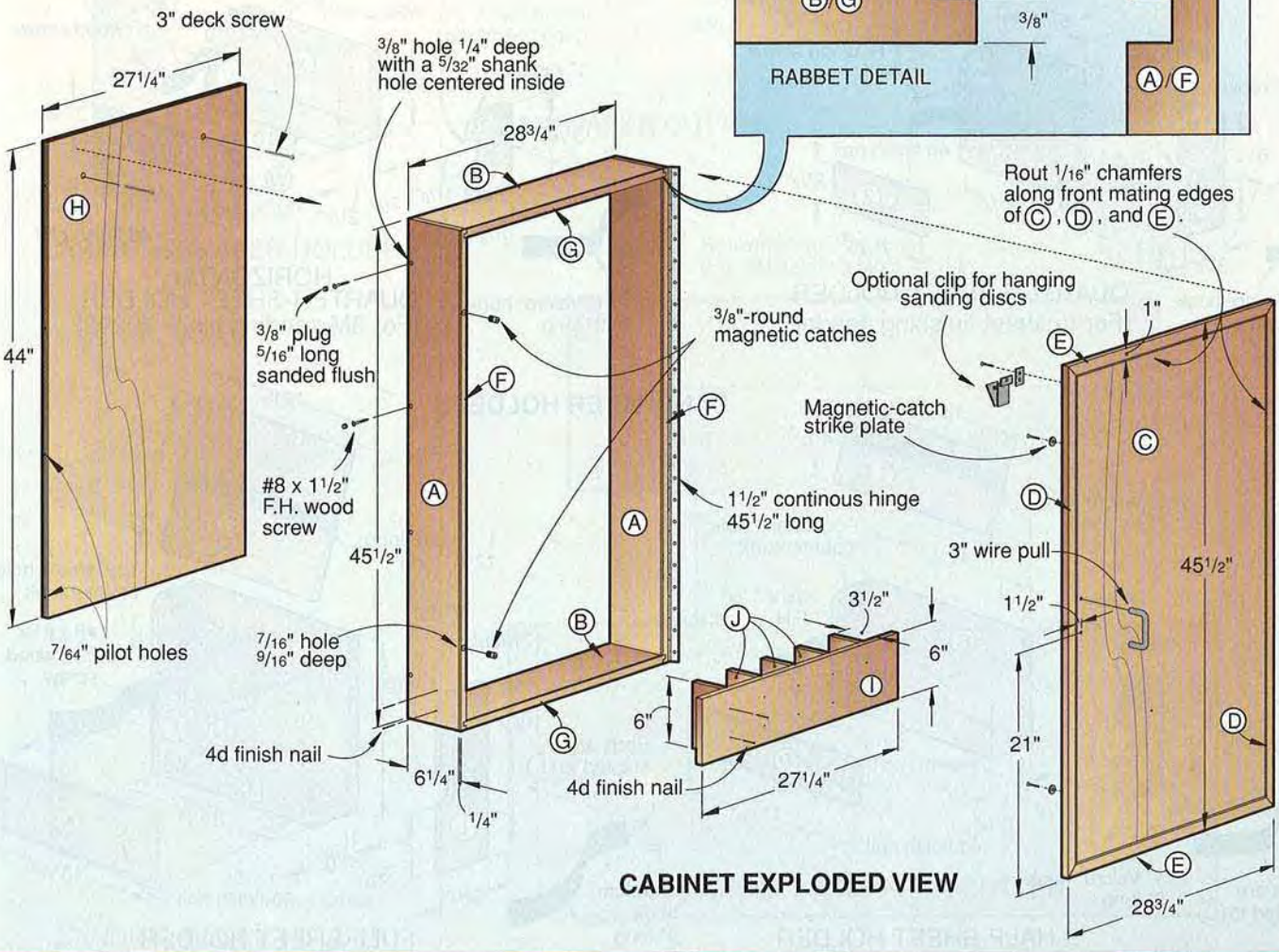




*Plane or resaw to thickness listed in the Bill of Materials.

CUTTING DIAGRAM





CABINET EXPLODED VIEW

sandpaper cutter is just the tool. The guides allow you to position the sandpaper square to the cutter, in this case a portion of a hacksaw blade. To make the sandpaper cutter, start by cutting the cutting board (HH) to the shape shown on the Sandpaper Cutter drawing, bevel-cutting the ends at 5° where shown on the accompanying Bevel detail. Then, cut or rout a ½" rabbet 1/32" deep along the ends of (HH) to fit the saw blade where shown on the drawing. Cut two hacksaw blades to the lengths listed on the drawing, and epoxy one in each rabbet. Now, cut the ¼"-thick strips to the lengths listed on the drawing and nail them in place.

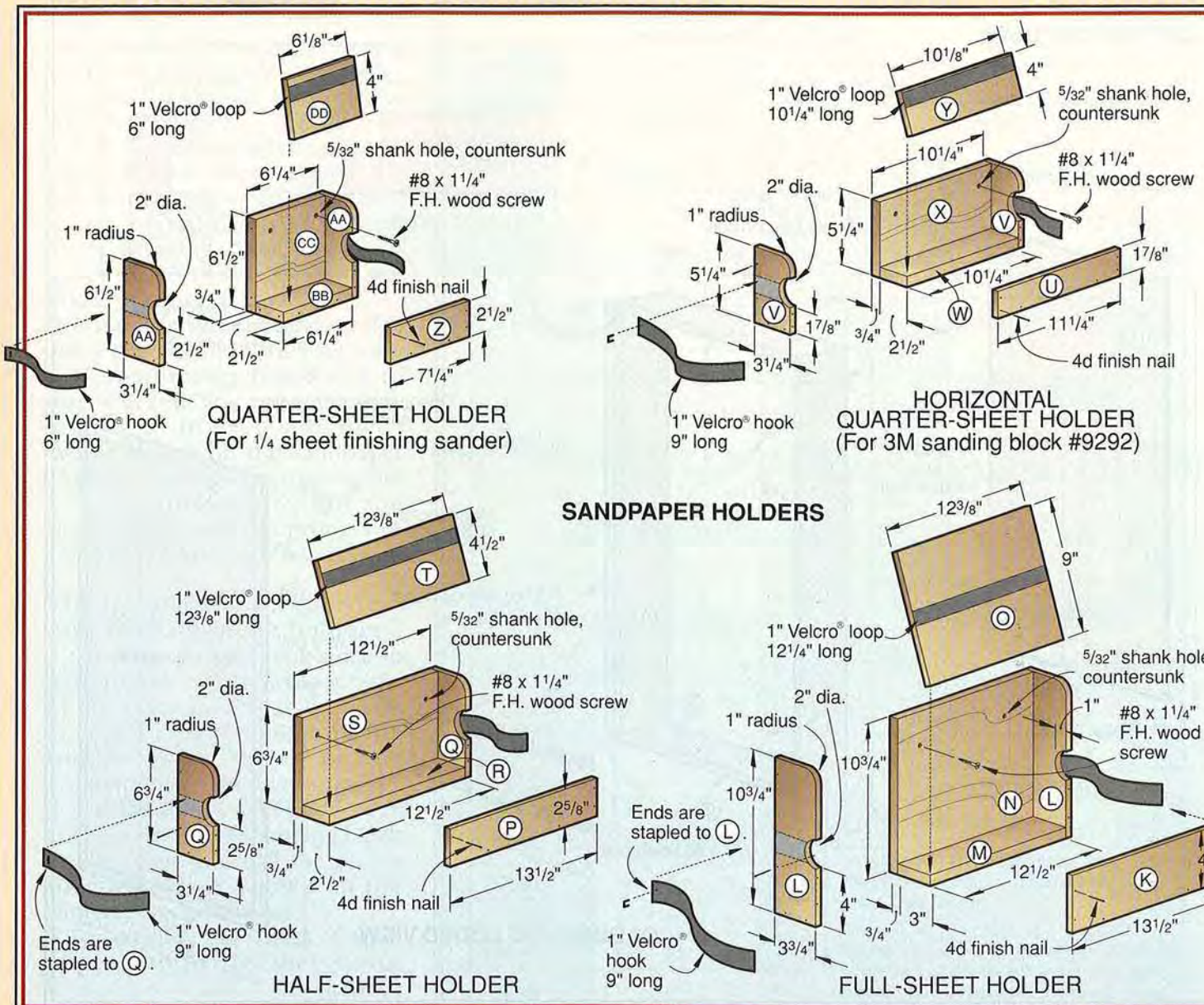
Finishing touches

1 Remove the hardware and holders from the assembled cabinet. Finish-sand all parts smooth. Mask the magnetic catch (they're nearly impossible to remove once they've been installed).

2 Apply a clear finish (we used satin polyurethane) to the door banding (D, E), the back face of the door panel (C), and the sandpaper holders. (See the opening photos for reference.)

3 After the finish dries, mask off the edging, and apply primer to the front face of the door (except the banding) and the cabinet assembly. Paint the primed areas.

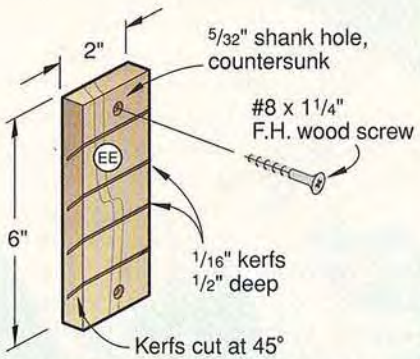
4 Attach (we used an air stapler) the hook fabric strips (we used Velcro®) to the sides of the hold-



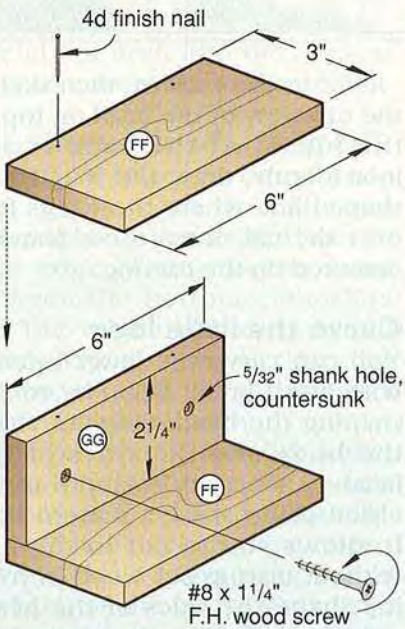
ers and the mating loop fabric to the front surface of the compressor boards.

5 Using a helper and a level, hang the cabinet on the wall, being sure to hit all available studs. Attach the holders to the front face of the cabinet back and secure clips to the back face of the door. Reattach the pull to the door, and add the sandpaper.

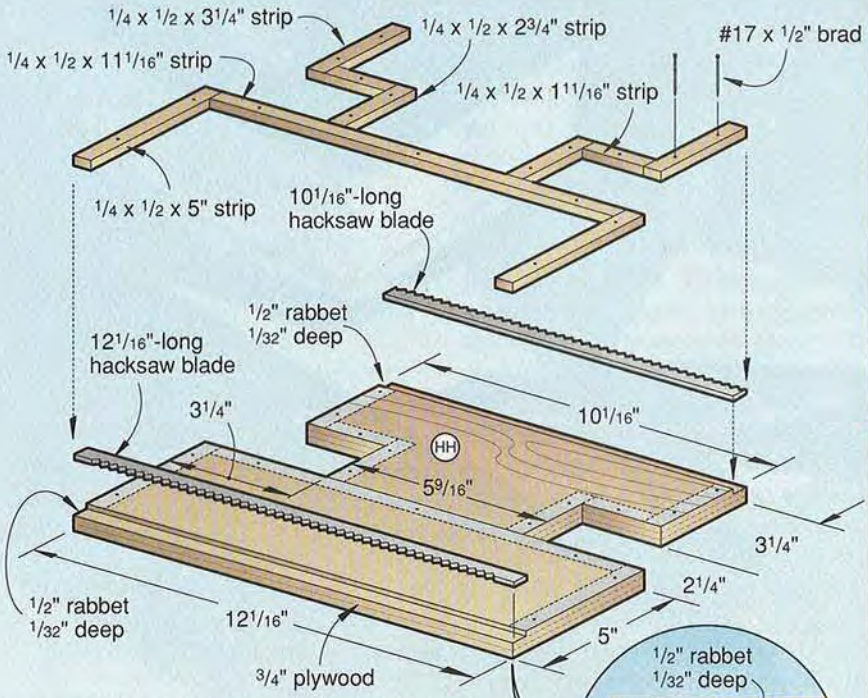
Written by Marlen Kemmet
Project Design: Jim Boelling
Illustrations: Roxanne LeMoine
Photograph: William Hopkins



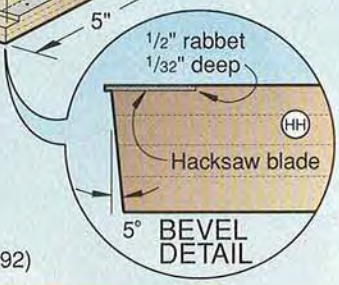
CABINET-SCRAPER HOLDER

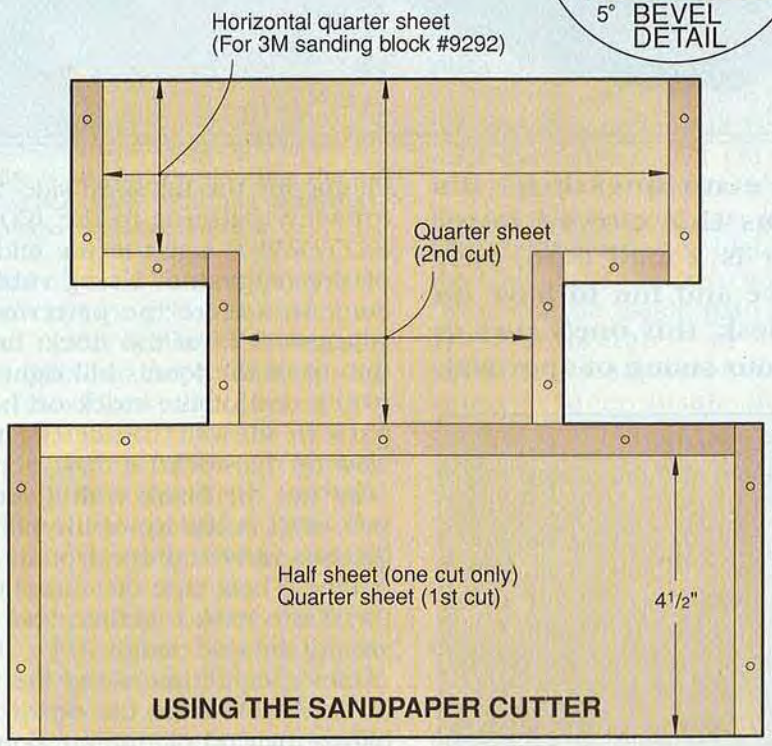


SANDING-BLOCK HOLDER



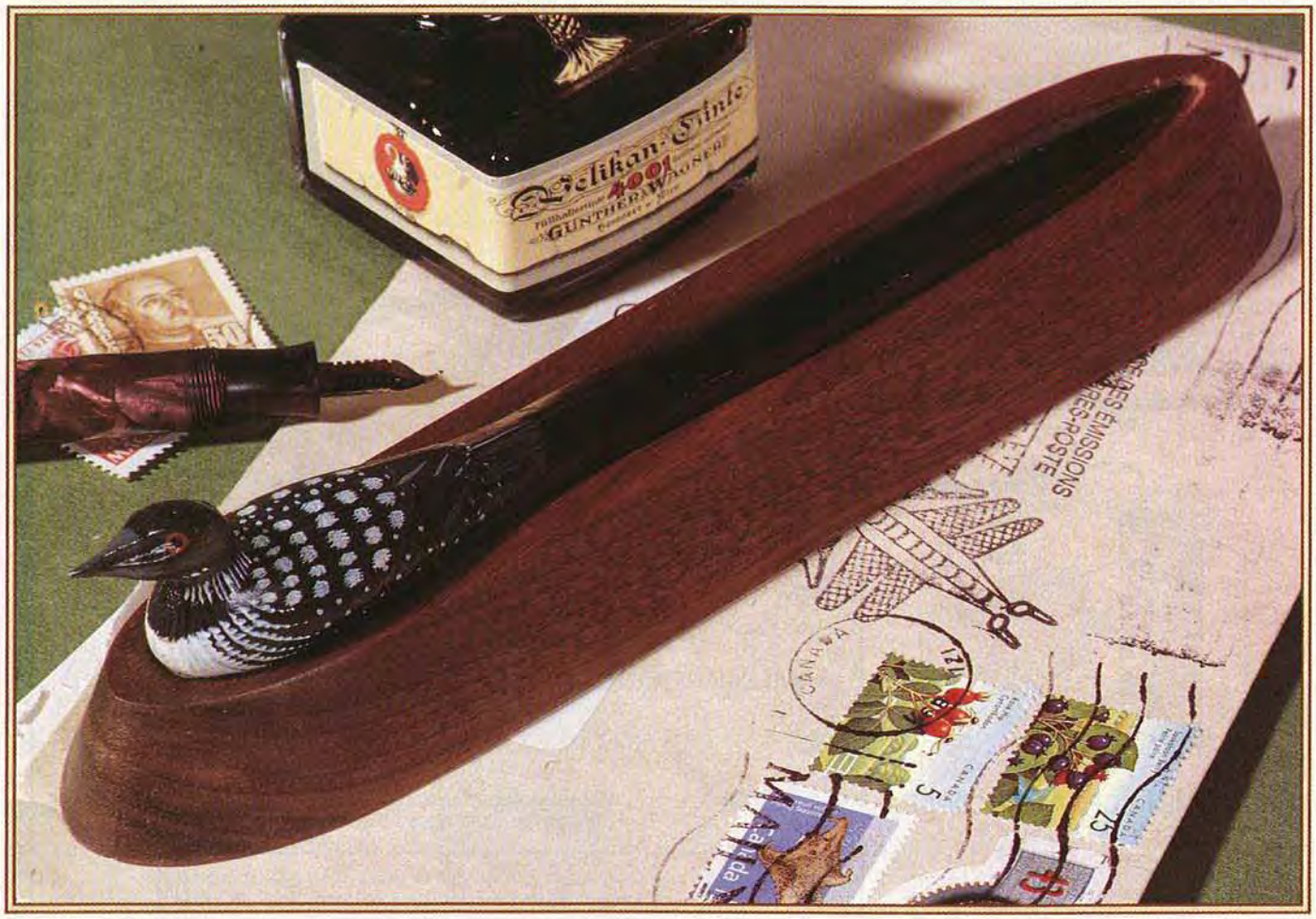
SANDPAPER CUTTER




Horizontal quarter sheet (For 3M sanding block #9292)
Quarter sheet (2nd cut)
Half sheet (one cut only)
Quarter sheet (1st cut)
4 1/2"

USING THE SANDPAPER CUTTER

LETTER-PERFECT



There's no question—it's obvious this carved letter opener is a mail loon. Easy to carve and fun to have on your desk, this one's sure to earn your stamp of approval.

Project prep

Stock: For a painted carving, use basswood or pine 1¼×1¼×8½". Carve a natural-finish letter opener from walnut, butternut, or other suitable wood of that size. For the base, you'll need a piece of walnut ¾×2×10".

Knife: Carving knife with a blade about 1½" long and a sharp tip.

Gouges: ¼" no. 5, ¼" no. 7 or 9

V-Tool: ⅛" no. 12

Photocopy the full-sized side- and top-view patterns in the *WOOD PATTERNS™* insert in the middle of the magazine. Using rubber cement, adhere the patterns to adjacent sides of the stock. Bring the tip of the loon's bill right up to the end of the stock on both pattern views. Center the top view on the stock.

Cut out the blank with a scrollsaw. Start at the tip of the bill on the top view and cut around the outline. Then, tape the cutout and the waste back together, and cut around the side outline.

Draw a centerline along the top of the blank, from the tip of the bill to the end of the letter-opening extended tail. Also, draw a centerline along the bottom and each edge of the long tail.

Refer to the pattern, then sketch the top-view of the head on top of the blank. At the back of the loon's body, draw the roughly M-shaped line where the wings fold over the tail. Keep these features centered on the carving.

Carve the little loon

You can carve the letter opener with just a knife. Begin by rough-shaping the head. Stop-cut along the body and the sides of the head. (A stop cut is simply an incision made along a pattern line. It allows you to cut to the line without tearing out wood beyond it.) Shape the sides of the head, cutting to the line drawn on top. Make small shaving cuts, laying the knife blade almost flat on the wood, as shown *opposite page*.

Print this article

LOON Carve a North Country desk accessory

Round the corners on the bill and head. As you carve the sides of the head, form slight hollows for the eyes, indicated by the shaded area on the pattern.

Take care at the tip of the bill—it's easy to chip off the end. Small cuts will serve you well here. It can help also to soak the bill with cyanoacrylate adhesive or thinned woodworker's glue.

As you carve the head and the rest of the loon, watch the grain direction carefully. On a small carving like this, even a tiny tearout can be disfiguring. If you do tear out a chip, glue it back into place with cyanoacrylate adhesive or woodworker's glue.

Stop-cut the folded wings at the back, then round the body. Start by cutting the corners on the body at about a 45° angle. Then, with light shaving cuts, pare the body to shape. Curve it from the centerline on the back to a line about two-thirds of the way down each side, shown by the dotted line on the pattern. Don't leave any flat surfaces or square corners on the body, except a small flat area on the bottom for it to sit on.

Blend the head into the body as you carve. Sand the loon smooth.

The short tale of a long tail

Carve the letter-opener blade next. Cut a plane from the top centerline to the centerline on each edge. Then, do the same between the bottom centerline and the edges, creating a diamond-shaped cross section. For best appearance, keep the edges and center ribs straight.

The blade should look like a long tail extending from the loon's body, with the folded wings laying over it. To achieve that effect, carve to the stop-cut wing line at the back of the body, letting the wings stand about 1/32" above the tail surface along the M-shaped line. It helps to undercut the edge, too.

Blend the blade into the body along the sides. Underneath, the tail flows right into the body, maintaining the slight V-shape. Blunt the pointed end slightly for safety. Sand the blade, bringing it to a sharp edge on each side.

It's ready for finishing

If you prefer a natural-finish letter opener, finish-sand, then apply the finish of your choice.

For the painted letter opener, finish-sand to 150-grit. Prime the carving with a coat of white acrylic gesso, available from art-supply or crafts-supply dealers.

A knife is all you need to carve the letter opener. Make whittling-style shaving cuts to minimize chip-out.

Paint the carving with acrylic artist's colors, also available from art or crafts dealers. Painting the loon calls for three standard colors: Mars black, titanium white, and cadmium red medium.

Begin with a base coat of Mars black. When that dries, add the loon's white markings. Paint the necklace feathers with a small liner brush (no. 0 or 1).

Represent the breast feathers with white lines flowing down and back. But don't paint solid lines. Instead, dab on a series of adjoining dots. In the area below the front of the neck, wash over the dotted lines with thinned white to create a shadow effect.

Now, add the distinctive white markings on the back. Paint them as rectangles with ragged ends. An easy way to do that is to paint each as a series of adjoining lines using your small liner brush. The loon shown has six rows of markings from front to back.

Scatter random white dots on the lower sides. Don't overdo it, and don't worry about making them all the same size. Paint a few along the center of the back, too.

Mix a dark gray (about half titanium white and half Mars black), and paint the bill. As an extra touch, add a few streaks of gray near the tips of the wings, and paint tailfeathers about 1/2" onto the long tail. For the loon's eyes, paint a dot of cadmium red medium where shown, then center a slightly smaller dot of black on it. Protect the paint job with a clear, semi-gloss coating.

Make a stand for the loon

To build the base, affix a photocopy of the pattern to a 3/4×2×10" piece of stock (we used walnut). Center the pattern on the stock—the finished piece will be larger than the pattern. Tilt your bandsaw table to 20°, then saw around the outside pattern line, keeping the workpiece on the high side of the table. Sand the sawn edge.

Stop-cut the inside pattern line. Then, with a no. 7 or 9 gouge about 1/4" wide, carve a recess about 1/8" deep inside the line. Smooth the bottom of the recess with a shallower gouge, say a no. 5, and cut the edge straight and true with the knife or a V-tool. Set the letter opener into the recess to be sure it fits.

Sand the base, including the inside of the recess. Slightly round all edges. Apply a clear finish. When it's dry, set the loon letter opener on the base.

Project Design: Robert E. Whiteside
Illustrations: Roxanne LeMoine
Photographs: John Hetherington

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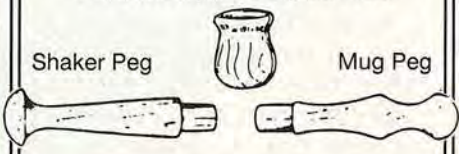

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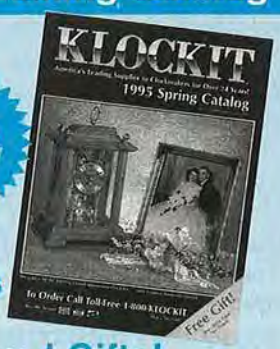

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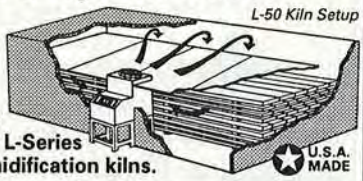

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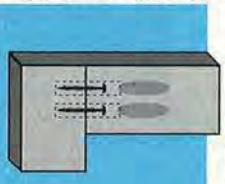

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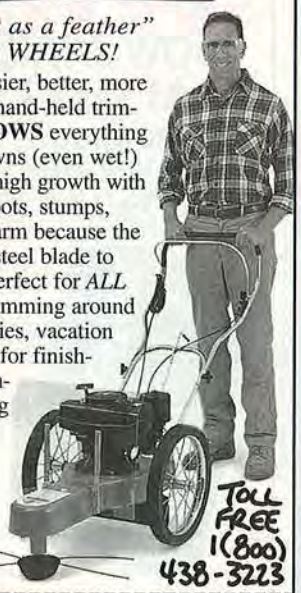

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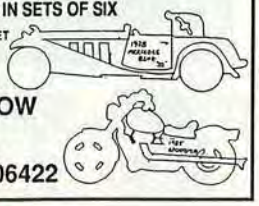

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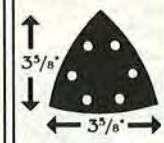

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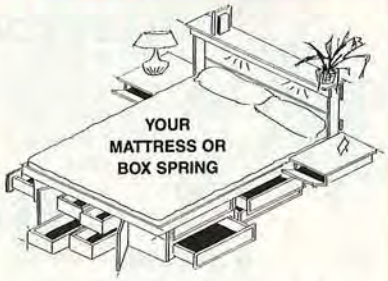

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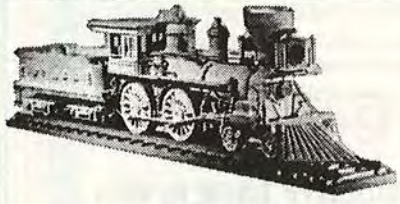

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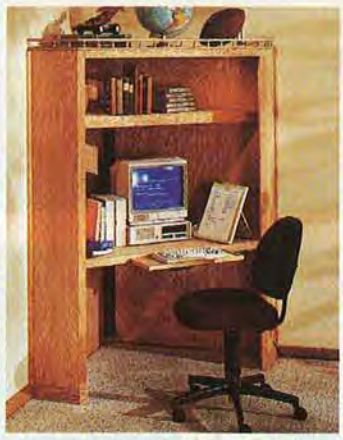

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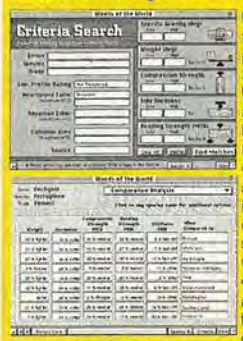

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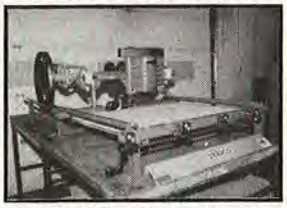
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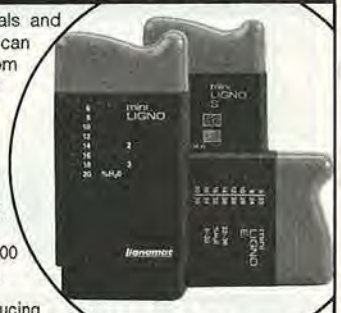

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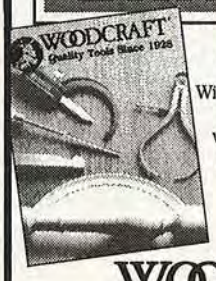

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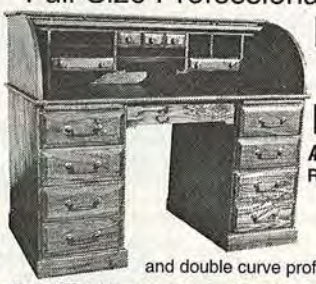

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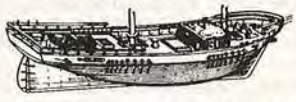

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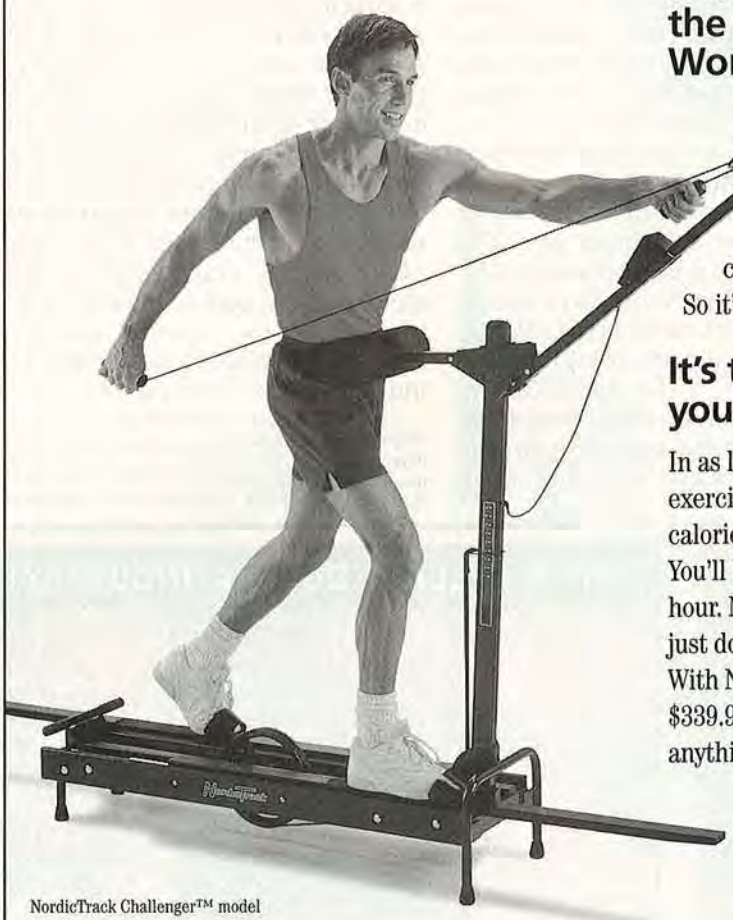

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WHALE OF FORTUNE

Continued from page 55

Now, for some painting

1 Prime the whale and base with white gesso or latex interior primer, then paint with acrylic artist's colors. The colors shown, all from Plaid's Folk Art line, are no. 731 Aqua Bright (AB), no. 903 Tapioca (TA), no. 934 Plum Pudding (PP), and no. 964 Midnight (DB). We also used no. 695 crackle medium on the base. All are sold by many crafts-supply dealers and Wal-Mart stores.

2 Paint the base first. Begin with an overall coat of AB. Then, apply crackle medium over the dried paint. Allow the crackle medium to dry, but don't expect any excitment yet—the action doesn't start until you put on the topcoat.

3 For that coat, mix DB and TA. Thin the paint slightly, then brush it over the dried base. Apply a single, uniform coat, and don't go back over it. The topcoat will crack as it dries, revealing the basecoat color through the cracks. A heavier topcoat will make larger cracks.

4 Paint the whale PP. Then, using a small liner brush, outline the mouth and eye with DB. Also, paint thin, parallel lines in the mouth to represent baleen. (Instead of teeth, some whales, including grays, have baleen, thin plates of fingernail-like material hanging from the upper jaw. The baleen act like a strainer; the whale expels a mouthful of seawater through them to extract food.)

5 Paint the details, using the colors shown on the Paint Colors drawing. Where mixed colors are shown, start the mixture with the color listed first, then add small amounts of the other colors until you reach a color approximating the one shown in the photo.

6 After the paint dries, coat the whale and base with matte acrylic varnish. For the plume, cut enough 3½-4" pieces of 4-lb. monofilament fishing line to make a bundle about ⅛" in diameter. (We cut them easily by wrapping a number of turns around the end of a 1¼"-diameter dowel, sliding them off, then cutting them.)

7 Bundle the pieces together so they fan out, then glue them with plastic-model cement. Extend the glue about ½" up the bundle, making sure you cement all the strands. When dry, glue the plume into the hole in the body.

Project Design: Bill Zaun
Photograph: John Hetherington
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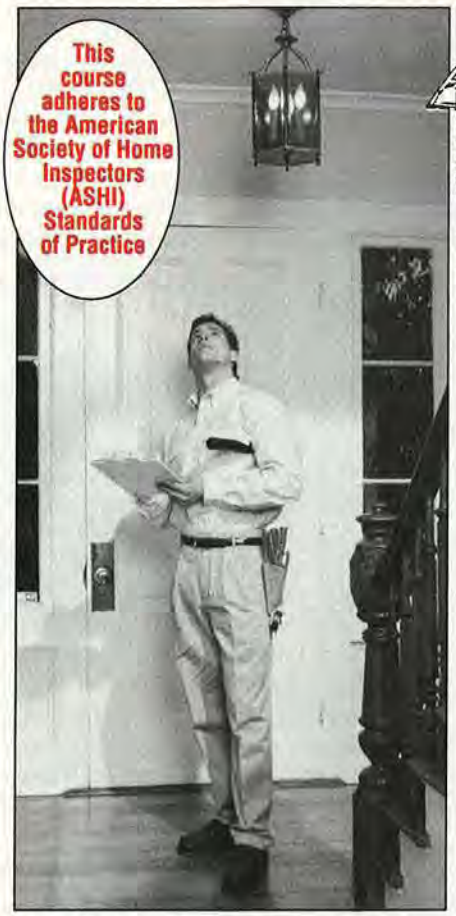

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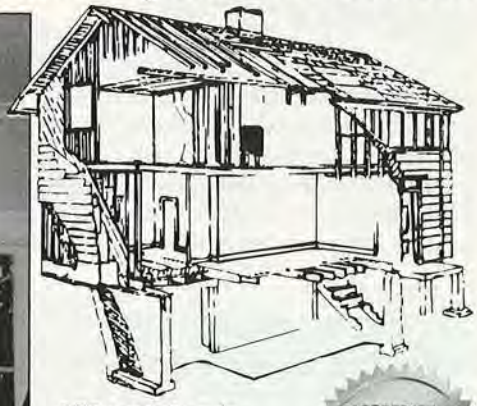

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What woodworkers need to know

LOOKING INTO GLASS

Working with glass makes a lot of woodworkers nervous. It's brittle, breakable stuff with edges that can cut like—well, glass. And woodworking tools are useless for sizing or shaping it. But some projects, ranging from picture frames to coffee tables, just wouldn't be the same without glass.

When it comes time to incorporate glass into a project, you can count on your local glass dealer to ease your anxiety. The folks at the glazier's shop can help you select the right stuff, cut it to size and shape, then grind the edges so they'll look better and won't lacerate your hands. All you'll have to do is install it.

Do the woodworking first

You may be tempted to have glass cut to the dimensions shown on the plans while you're out buying lumber for your project. But, you'll avoid a lot of headaches if you build the project first, then buy a piece of glass cut to fit the actual opening.

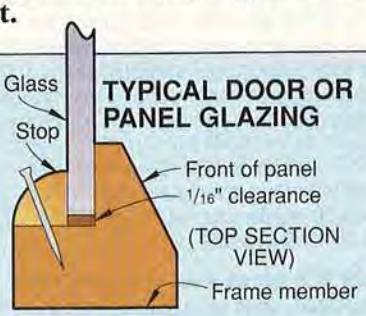
If you're building a table with a beveled-glass top, though, do visit the glass dealer first to determine the edge thickness of the beveled glass. You can then make the rabbet for the glass to the exact depth for better appearance, as shown *opposite page, bottom.*

Just get the information on that first visit, though. Don't order an expensive piece of beveled glass until you know the exact dimensions of the glass.

When you construct a rabbeted opening for glass, take care to make the inside face—the surface the glass will bear against—flat and smooth all around. Anything that sticks up from the surface—even a lump of squeezed out glue—puts pressure on the glass at that point and could cause a crack. Be careful, too, that screw points don't poke through the rabbet into the glass.

To determine the glass size, first measure the completed opening's length and width. Take measurements at several points and across the diagonals to verify that the opening is square.

The glass must be smaller than the opening to allow clearance all around. "You need at least 1/16" clearance along each edge," advises Chuck Hedlund, *WOOD®* magazine's project builder. He allows a little more than that minimum this way: "After I measure the opening, I subtract 3/16" from both the width and length; that gives me the glass size."



Remember, you can't plane a smidgen off a corner of a piece of glass, and you certainly can't flex it into an out-of-square frame. So if the opening's corners aren't quite square or the sides aren't exactly parallel, cut a paper or cardboard template for the opening. Trim it to glass size, then take it to the glass shop as a pattern for cutting.

Always take the glass cutter a pattern for any oval or oddly shaped piece of glass, too. "In fact," Chuck says, "you should make a pattern for any piece of glass. It's the best way to be sure that the glass will fit."

Buying glass for your project

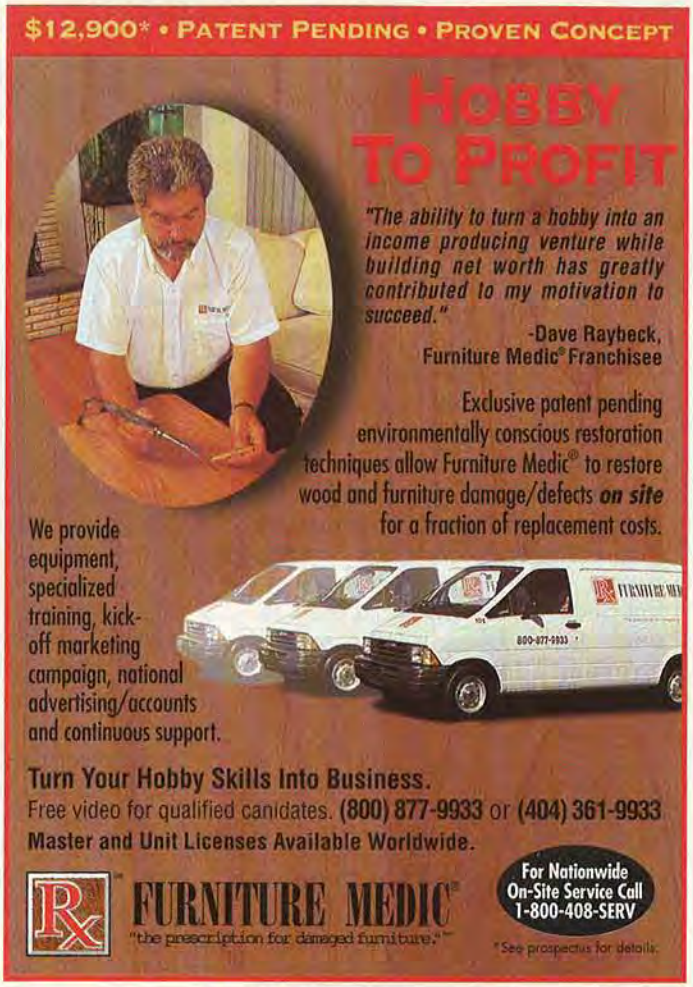
For most woodworking projects, clear (untinted) flat glass will suffice. It's generally available in six thicknesses—3/32", 1/8", 3/16", 1/4", 3/8", and 1/2". Different applications call for different thicknesses, but the glass itself is all the same.

Standard window glass—3/32" thick—works well for picture frames. Though many people, even within the trade, still refer to this as Single Strength glass, that's old hat, along with other traditional glass designations, such as Double Strength, Sheet, and Plate.

"Those terms go way back to old ways of making glass," explains a spokeswoman for PPG Industries, a major glass manufacturer. "Now, it's all float glass, and we classify it by thickness. So, what used to be called Double Strength, for example, is now simply 1/8" glass." (*Float glass* refers to the manufacturing method in which molten glass is flowed across a pool of molten tin, resulting in smooth glass of uniform thickness.)

For cupboard doors, display case sides, and similar uses in the home, Chuck likes to use 1/8" glass. Tabletops, shelves, and other horizontal surfaces that may have objects placed on them should be thicker. "We always recommend glass at least

Continued on page 94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What woodworkers need to know

LOOKING INTO GLASS

Continued from page 92

¼" thick for tabletops," says Des Moines, Iowa, glass dealer Tom Ballard. "We've seen ⅛" tabletops crack just from setting glasses on them," he adds.

Tom limits his ¼" recommendation to moderately sized tops fully supported along all edges. Glass that rests only on a leg at each corner, for instance, or on a central pedestal, should be at least ⅜" thick, he cautions. In all cases, an unusually large piece of glass should be thicker—your glass dealer can advise you.

Sanding gives glass the edge

When you buy glass for shelves or tabletops, ask for seamed—or sanded—edges. This doesn't add much to the cost of the glass, and it looks much better than plain cut edges. Seaming makes the glass safer to handle, too. (You could have this done on any piece of glass, if you like.) Many dealers can radius the corners for you, too—to fit neatly into a routed rabbet, for instance.

For a fancier look, Tom suggests two inexpensive rounded-edge treatments—the pencil edge and the polished edge. The pencil edge has a dull, sanded finish while the polished edge is, of course, as smooth as glass. Most glass dealers can do these.

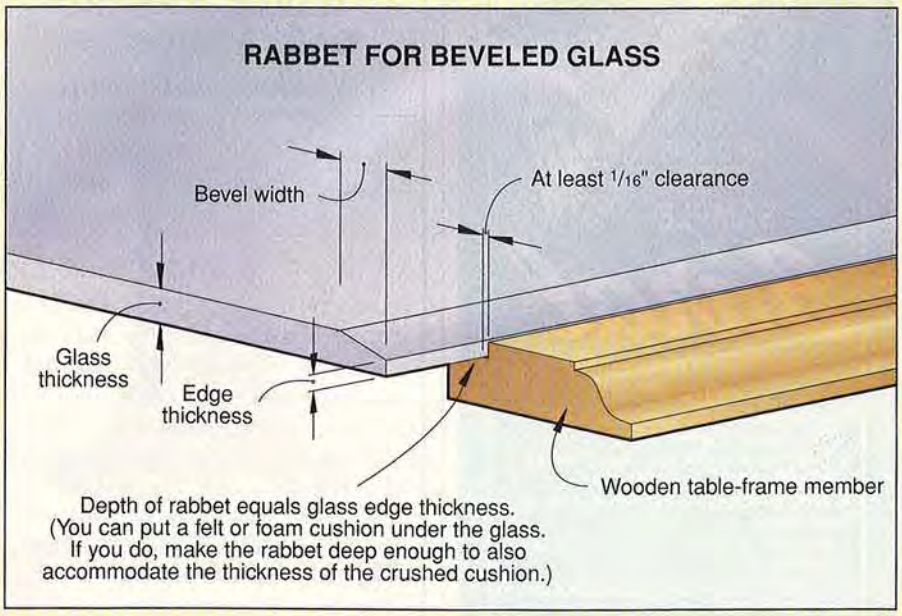
Fewer glass shops have the expensive equipment needed for beveling glass edges, so your dealer may have to order beveled glass. You usually can specify the width of the bevel, between ¾" and 1½". (Bevels are commonly 1" or 1½".) The cost depends on the width and total length of the bevel. Figure on spending a lot if your project calls for beveling a curved edge.

Install the glass

When you're laying the glass into a rabbeted opening for a tabletop, duct tape prevents pinched fingers and broken glass. Fold a piece of tape about 10-12" long into a handle, like the one on the glass in the photo *right*. Stick it to the middle of the glass near one end, then position the opposite end of the glass in the opening. Lower the glass as far as possible into the opening, then finish laying it in place by hanging onto the tape handle, as shown. (Use the same trick to lift one end of the glass when you need to remove it.)

For glazed doors or panels, set the glass into the opening and apply the stops. The illustration *opposite page* shows how stops are typically installed.

Pre-drill pilot holes for the brads or small finishing nails through the stops. This will prevent a nail from splitting the stop or going astray and breaking the glass. Press the glass firmly against the inside face of the rabbet with the stops. Add cushioning material, if you wish.


RABBET FOR BEVELED GLASS
Bevel width
At least 1/16" clearance
Glass thickness
Edge thickness
Wooden table-frame member
Depth of rabbet equals glass edge thickness.
(You can put a felt or foam cushion under the glass.
If you do, make the rabbet deep enough to also
accommodate the thickness of the crushed cushion.)

Photograph: Hopkins Associates Illustrations: Roxanne LeMoine

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Model	Description	List	Sale
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11-950	8" Drill Press	199	135
31-050	1" Belt sander 2.0 amp	104	75
31-460	4" Belt/Disc Sander	198	129
40-560	16" 2 speed Scroll Saw	266	178
11-990	12" Bench Drill Press	276	184
11-090	32" Radial Bench Drill Press	399	305
43-505	1/2" Bench Router/Shaper	399	289
22-540	12" Bench Top Planer	Sale	385
	FREE Set of extra knives included!		
36-220	10" Compound Mitre Saw	350	219
28-180	Bench Band Saw	232	158
28-190	NEW 12" Band Saw	465	395
40-640	20" Bench Scroll Saw	466	295
37-070	NEW 6" v/spd Bench Jointer	337	258
14-650	Hollow Chisel Mortiser	668	289
46-700	12" Wood Lathe	548	449
33-990	10" Radial Arm Saw	818	695
37-280	6" Motorized Jointer	488	389
50-179	3/4 HP 2 stage Dust Collector	483	358
33-055	8-1/4" Sawbuck comp w/legs	865	625
36-040	8-1/4" Compound Mitre Saw	224	149
36-905	30" Unifence	385	249
34-897	50" Delta Unifence	525	299
36-755	10" Tilt Arbor Saw	1264	1015
17-900	16-1/2" Floor Drill Press	462	399
33-060	"Sidekick" Miter Saw	510	389
37-190	NEW 6" Deluxe Jointer	554	479
36-275	NEW 8-1/4" Builders Saw	444	265
36-210	NEW 10" Compound Mitre Saw	438	255
36-070	NEW 10" Mitre Saw	284	165
36-630	NEW 10" Contractors Saw II	700	579
34-555	NEW Sliding Table	459	319
28-283	14" Band Saw w/enc. stand	910	779
22-661	13" Planer w/ 2HP motor	1513	1215
37-154	DJ15 6"Jointer w/3/4HP motor	1451	1215
34-444	Contractors Table Saw	812	649
34-445	34-444 Saw w/30" Unifence	1200	829
34-445X	34-445 Saw w/ mobile base & carbide blade	Sale	899
36-250	NEW 10" Slide Compound Saw	825	489

MILWAUKEE TOOLS

6527	NEW Sawzall with case	320	172
6528	above Sawzall w/wired cord	316	172
0407-1	12V Drill w/kyls chuck & 2 batt		172
0406-1	9.6V Drill Kit with 2 batteries	332	159
0224-1	3/8" Drill 4.5 amp magnum	227	124
0234-1	1/2" Drill 4.5A mag 0-850 rpm	237	132
0244-1	1/2" Drill 4.5A mag 0-600 rpm	237	132
0222-1	3/8" Drill 3.5 amp 0-1000 rpm	198	115
0228-1	3/8" Drill 3.5 amp 0-1000 rpm	195	112
0375-1	3/8" close quarter Drill	237	139
0379-1	1/2" close quarter Drill	268	158
6546-1	cdls Scrwdvr 200 & 400 rpm	141	84
6547-1	6546-1 w/bits, 1/4" chuck, & cse	176	105
5399	1/2" D-hdle Hammer Drill Kit	332	194
6507	Original SawZall with case	264	144
5397-1	3.8" var. spd Hammer Drill Kit	255	142
5371-1	1/2" var. spd Hammer Drill Kit	340	188
3107-1	1/2" v/spd right angle Drill Kit	399	219
6754-1	Drywall Gun 0-4000 5.4 amp	196	114
3300-1	1/2" var. spd right angle Drill	356	194
5680	Router 2 HP w/ 1/4" & 1/2" collets	362	195
0235-1	1/2" Drill w/keyless chuck	237	138
6142	4-1/2" Grinder w/cse & access.	208	124
6749-1	Drywall Gun 0-2500 5.4 amp	218	128
6365	7-1/4" Circular Saw 13 amp	218	122
6366	6365 w/fence & carbide blade	228	129
6368	6365 w/fence,carb. blde,& cse	249	139
6377	7-1/4" Worm Drive Saw	330	189
6256	Top Handle Jig Saw	264	152
6490	10" Mitre Saw	444	248
6491	6490 w/ carbide blade & bag	532	279
6494	NEW 10" Compound Mitre Saw	444	315
0422-1	NEW 12V Hammer Drill w/2 batt	430	249
0431-1	NEW 12V Drill w/ 2 batteries	385	229

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Item	Description	Teeth	List	Sale
LU72M010	Gen Pur. A.T.B.	10° 40	69	39
LU82M010	Cut-off 10"	60	93	45
LU84M011	Comb 10"	50	78	42
LU85M010	Super Cut-off	10° 80	115	59
LM72M010	Ripping 10"	24	69	38
LU73M010	Cut off 10"	60	84	45
LU87M010	Thin Kerf 10"	24	72	39
LU88M010	Thin Kerf 10"	60	88	45
LU98M010	Ultimate 10"	80	128	68
LU91M010	Compnd Mitre 10"	60	88	54
F410	NEW Quiet Blade 10"	40	95	49
F810	NEW Quiet Blade 10"	80	135	74
TK303	7-1/4" Finishing	40	38	22
TK906	10" Combo	50	53	32
SD308	8" Dado - Carbide		230	119
SD506	6" carbide w/case & shims		292	155
SD508	8" carbide w/case & shims		344	168
F0	1-3/4" x 5/8" Biscuit 1000 Qty		43	29
F10	2-1/8" x 3/4" Biscuit 1000 Qty		43	29
F20	2-3/4" x 1" Biscuit 1000 Qty		45	29
FA	Assorted Biscuits 1000 Qty		45	29
FB100	16 piece Forstner Bit Set		338	189
94-100	5 pc. Router Bit Door System		320	159
TR215	10° Slide Cmpd Mitre Saw		688	369
FT2000E	3-1/4 HP v/sp Plunge Router		410	205
	FT2000E comes with FREE FT2010 Guide			
JS100	Biscuit Jointer & biscuits		334	164

MAKITA TOOLS

Model	Description	List	Sale
6070DW	3/8" v/spd Reverse Drill 7.2V	128	64
6172DWE	3/8" v/spd Drill Kit w/ 2 batt	220	109
5090DW	3-3/8" Saw Kit 9.6 volt	270	145
ML900	Incandescent Flashlight 9.6V	Sale	37
DA391DW	3/8" angle Drill Kit 9.6 volt	312	179
6012HDWE	2 speed Drill Kit w/2 batt.	243	135
6093DWE	6093DW Drill Kit w/2 batteries	270	139
6095DWE	6095DW Drill Kit w/2 batteries	270	139
6095D	6095DW Drill only & case	Special	79
632007-4	9.6 volt Battery	47	30
632002-4	7.2 volt Battery	39	28

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6202DWG	9.6V 3/8" Drill Kit w/ LED batt	390	219
6212DWG	12V 3/8" Drill Kit w/ LED batt	412	228
6312DWG	12V 1/2" Drill Kit w/ LED batt	432	239
6201DWHE	9.6V 3/8" Drill Kit w/ 2 batt	351	185
6211DWHE	12V 3/8" Drill Kit w/ 2 batt	368	195
6311DWHE	12V 1/2" Drill Kit w/ 2 batt	399	205
5007NBA	7-1/4" Saw w/electric brake	263	135
9900B	3" x 21" Belt Sander w/bag	344	175
9924DB	3" x 24" Belt Sander w/bag	329	184
4301BV	Orb. var. spd Jig Saw 3.5A	292	158
JR3000V	var. speed Recip Saw w/case	252	139
9820-2	Blade Sharpener	394	215
N1900B	3-1/4" Planer with case	244	129
N9514B	4" Disc Grinder 4.6 amp	111	65
B04552	1/4 sheet Pad Sander w/bag	98	52
DA3000R	3/8" Angle Drill	314	179
2708W	8-1/4" Table Saw	585	298
2711	10" Table Saw with brake	1067	589
6404	3/8" Drill Rev. 0-2100 rpm	112	68
6510LVR	3/8" Drill Rev. 0-1050 rpm	168	98
6013BR	1/2" Drill Rev. & amp	280	149
9401	4" x 24" Belt Sander w/bag	378	229
4303C	var. speed Orbital Jig Saw	351	205
5077B	7-1/4" Hypoid Saw	281	155
5007NB	7-1/4" Circular Saw 13 amp	232	124
5007NBK	5007NB Saw w/ plastic case	Sale	129
LS1011	**10" Slide Compound Saw**	946	525
LS1211	New 12" Slide Cmpd Saw	1550	865

SENCO AIR NAILERS

SFN1	Finishing Nailer 1" - 2"	448	309
SN325	Nailer 1-7/8" - 3-1/4"	665	419
SLP20	New Pinner w/cse 5/8 -1-5/8"	399	278
SKS	Stapler 5/8" - 1-1/2"	390	275
SN70	Fram. Nailer Clip Hd 2"-3-1/2"	690	479
SN60	Fram. Nailer-Full Hd 2"-3-1/2"	638	449
SFN40	NEW Finish Nailer 1-1/4 - 2-1/2	571	389

BOSTITCH AIR NAILERS

N80S-1	Stick Nailer	Super Sale	348
RN45	Coil Roof Nailer 3/4 - 1-3/4	845	395
N60FN-2	Finishing Nailer	650	335
BT35-2	Brad Tacker 5/8" - 1-3/8"	275	165
BT35-2K	BT35-2 w/ case, oil, & brads	299	175
CWC100	1 HP Pancake Compressor	463	289
MIIIFS	Flooring Stapler 15 gauge	931	529
S32SX-2	Finish Stapler - 1/2" - 1-3/8"	275	165
S32SX-2K	S32SX-2 with case & oil	269	179
PC5000-1	NEW Power Crown Stapler	300	159

SKIL SIZZLERS

2735-04	12 volt cordless Drill Kit	249	144
2736-04	2735-04 with keyless chuck	269	148
1605-02	Biscuit Joiner w/case	221	135
3400	10" Table Saw - Bench Top	270	189
77	Famous 7-1/4" Worm Drive Saw	Sale	144
77M	NEW 77 Mag Worm Saw - 2 lbs lighter than Model 77	Sale	159

PANASONIC CORDLESS

EY6205EQK	Same as EY6205BC but comes with **Ironman** battery	368	192
EY6207BC	NEW 12 volt 1/2" Drill w/keyless chuck var. speed w/15 min. charger & case	420	222
EY6282EQK	Var. spd 9.6 volt Drill with 15 min. charger, case & NEW **Ironman** battery	315	169
EY62821DKW	9.6 volt Drill Kit w/2 batt.	395	162

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EY6100CQKW	Same as **EY6100CRKW** but has 15 minute charger	420	198
EY6100EQK	NEW 12 volt Drill kit with NEW **Ironman** battery, 15 min. charger, & cse	375	199
EY6100EQKW	Same as **EY6100EQK** but w/2 **Ironman** batteries	473	225

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DW945K-2	12V cdls Drill Kit w/2 batt	309	179
DW944K-2	9.6V cdls Drill Kit w/2 batt	263	165
DW610	1-1/2 HP 2 handle Router	274	149
DW411	1/4 sheet Palm Sander	97	58
DW100	3/8" Drill, 4 amp,0-2500 rpm	118	68
DW682K	**Biscuit Joiner with case**	429	219
DW705	12" Compound Mitre Saw	706	359
DW625	3 HP var. spd PlungeRouter	Sale	275
	DW625 Router comes with FREE DW6966 Fine Depth Adjuster!		
DW930K	NEW 12V 5-3/8" Trim Saw Kit	370	199
DW935K	NEW 14.4V 5-3/8" Trim Saw Kit	444	237
	DW935K comes with FREE DW9091 battery!		
DW675K	3-1/8" Planer with case	289	164
DW431	3 x 21 v/spd Belt Sander	331	184
DW421	5" Palm Random Orbit Sander	125	79
DW444	6" Ran Orb Sander-PSA pad	266	139
DW443	DW444 w/hook & loop pad	266	139
DW673K	NEW Laminate Trimmer Kit	364	215
	DEWALT CORDLESS DRILLS		
DW952K	3/8" v/spd w/two 9.6V batt	280	145
DW953K	3/8" v/spd w/one 12V batt	306	175
DW962K-2	3/8"v/sp w/two 9.6V XR batt.	324	179
DW972K-2	3/8"v/sp w/two 12V XR batt.	352	189
	above drill comes with FREE bit set!		
DW991K	3/8"v/sp w/one 14.4V XR batt	370	199
DW991K-2	above drill w/ 2 batteries	Sale	225
	Above drill kits come w/ charger & steel case!		

HITACHI TOOLS

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C10FS	10" Slide Compound Saw	1595	745
P12R	12-9/32" Planer	1470	815
P12RA	Planer/Joiner	1940	1015
G12SA	4-1/2" Grinder 6.9 amp	160	89
NR83A	Fram Nailer 2 - 3-1/2 Full Head	700	409
NR83AA	Framing Nailer 2 - 3-1/2	750	425
NT65A	16 ga. Brad Nailer 1 - 2-1/2	610	339
NV45AB	Coil Roofing Nailer 7/8 - 1-3/4	750	435

BIESEMEYER FENCES

B-50	50" Commer. Saw Fence	345	298
T-SQUARE 52	52" Homeshop Fence	279	238
T-SQUARE 40	40" Homeshop Fence	259	208
T-SQUARE 28	28" Homeshop Fence	249	198

JORGENSEN ADJUSTABLE HANDSCREWS

Item#	Jaw Length	Open Cap	List	Sale	Box of 6
#0	8"	4-1/2"	19.76	11.75	58.00
#1	10"	6"	22.63	12.50	68.00
#2	12"	8-1/2"	25.95	14.50	78.00

PONY CLAMP FIXTURES

Model		List	Sale	Lots of 12
50	3/4" Black Pipe Clamps	14.87	7.80	88.95
52	1/2" Black Pipe Clamps	12.40	6.70	71.50

BOSCH

Model	Description	List	Sale
1587VS	NEW Top Hand "CLIC" Jig Saw	292	149
1584VS	NEW Barrel"CLIC"Jig Saw	285	149
Bosch Metal Case for above Jig Saws		34	32
Bosch 30 blade assortment for Jig Saws			28.99
	1584VS or 1587VS with steel case and 30 Bosch blades	Sale	189
1272D	3° x 24" Belt Sander with bag.	375	209
1273D	4" x 24" Belt Sander with bag.	380	215
11212VSR	Bulldog 3/4"SDS Rtry Drill	390	209
1347AK	4-1/2" Grinder w/cs & access.	185	109
1194VSR	1/2" var. speed Hammer Drill	282	155
1194VSRK	above Hammer Drill w/case.	313	169
1609K	Lam Installers Kit with 1609	343	189
1609KX	Deluxe Installers kit	405	234
1604A	1-3/4 HP 2 Handle Router	250	142
1604AK	same as above w/cse & acc	318	185
1606A	1-3/4 HP D-handle Router	295	184
3270DVS	3 x 21v/spd belt sander w/ bag	270	165
1273DVS	Var. spd 4" x 24" Belt Sander	415	225
1614EVS	1-1/4HP v/spd Pige Router	283	159
1613EVS	2HP v/sp Plunge Router	359	199
1615EVS	3 HP v/spd Pige Router	505	285
1632VSRK	Recip Saw 8.4A orb-v/spd	225	159
3050VSRK	9.6V cdls v/sp Drill Kit comp	288	149
3051VSRK	3050VSRK w/keyless chuck	299	149
3054VSRK	12V Drill Kit w/ 2 batteries	330	185
3300K	NEW 12V T-handle Drill Kit w/ 2 batt	348	199
3310K	NEW 12V T-handle Drill Kit with 2 batteries	348	199
3110K	NEW 9.6V T-handle Drill Kit with 2 batteries	320	185
3283DVS	5" Random Orbit Sander	169	98
3283DVSK	3283DVS Kit complete	199	118
B1650K	NEW Biscuit Joiner	289	155
B7000	NEW Corner Detail Sander	122	68
B7001	B7000 w/ variable speed	156	95
B4050	NEW In Line Jig Saw	199	115
11230EVS	NEW SDS-max 1-1/2" Rtry Hmr	885	525
11231EVS	NEW SDS-max 1-3/4" Rotary Hammer	1336	809
11223EVS	NEW SDS-max 2" Rotary Hmr	1548	929

AEG POWER TOOLS

Model	Description	List	Sale
TXE150	6" var/spd Ran Orb Sander	304	139
HBSE75S	3"x21" var/spd Belt Sander	309	178
BSPE100X	Top Handle Jig Saw w/case	286	162
FSPE100X	Barrel Grip Jig Saw w/case	274	162

PORTA NAILER

401	Porta Nailer complete	265	205
501	Face Nailer complete	265	205

BLACK & DECKER

2694	7-1/4" Super Sawcat w/case	285	158
2695	8-1/4" Super Sawscat w/case	328	175

DAVID WHITE

LP6-20	Sight Level package - 20x	310	205
LP6-20XL	LP6-20 w/9056 tripod & 7620 rod		265
LT8-300	Level Transit - 26x	695	439
LT8-300P	above Level w/optical plum	821	518
LT6-900	Level Transit - 20x	389	254
ALT6-900	Automatic Level - Transit -18x	638	395
ALTP6-900	above Level w/tripod & rod	708	495
ALP6-18H	Dabove Level w/tripod & rod	570	385
ML100I	NEW Laser Level	1099	945
ML100	NEW Laser Level w/detector 1249		1075

RYOBI SPECIALS

RE600	3 HP Plunge Router	500	228
BE321	3" x 21" var. spd Belt Sander	310	148
TFD222VRK	12V cordless Drill Kit	365	149
BT3000	10" Table Saw with stand	1125	529
AP12	12" Bench Planer	684	395
BS900	9" Bench Band Saw	340	165
OSS450	Oscillating Spindle Sander	340	159
ML618	NEW Mini Lathe var/spd	418	225
DC500	NEW Detail Carver	120	64
TSS200	NEW 8-1/2" Slide Comp. Saw	895	399

SIOUX TOOLS

8030	New 3/8" var/spd Drill	250	145
8000	3/8" var/spd close qtr Dril	201	125
690	5" Air Random Orbit Sander	139	132
Msx636 FEIN	Triangle Sander Kit	Sale	199
Msx625 FEIN	New Air Triangle Sander	Sale	189
Lamello	New Cordless Biscuit Joiner	695	549
LPN672 PONY	Air Palm Nailer w/glove	Sale	94.99
RTM01 ROTOZIP	Drywall cut out unit		68.95

QUAL-CRAFT PRODUCTS

2200	Pump Jack	79	58
2201	Pump Jack Brace	30	20
2203	Pump Jack guard rail holder	31	21
2204	Workbench & rail holder combo	53	39
	Buy any 6 (can be assort.) deduct 10%		
2601	Wall Jack	167	108
	Lots of 4 deduct additional 10%		

PORTER CABLE

444	Profile Sander	157	94
9444	Profile Sander Kit	205	119
7499	Ultimate Cut-out tool	113	69
690	1-1/2 HP Router 8 amp	260	138
691	1-1/2 HP Router D-handle	285	155
693	1-1/2 HP Plunge Router Base	320	174
6931	Plunge Router Base	125	77
695	1-1/2 HP Router/Shaper	400	223
696	Heavy Duty Shaper Table	230	129
351	3" x 21" Belt Sander w/o bag	280	154
352	3" x 21" Belt Sander with bag.	290	159
352VS	3x21 Belt Sander w/bag v/spd	305	169
360	3" x 24" Belt Sander with bag.	365	198
361	3" x 24" Belt Sander w/o bag	345	189
362	4" x 24" Belt Sander with bag.	380	205
97751	1/2" v/spd Hammer Drill w/cse	270	155
9118	Porta Plane Kit 7 amp	390	218
505	1/2 sheet Pad Sander	230	128
7549	Top handle Jig Saw 4.8 amp	270	135
330	Speed Block Sander 1/4 sheet	110	60
556	Biscuit joiner w/5556 tilt fence	Sale	139
345	6" Saw Boss 9 amp	190	104
9345	345 comp. w/cse & carb blde.	220	124
9647	TIGER CUB Recip. Saw	210	119
9637	Full var/spd Recip Saw 8 amp	270	148
7519	3-1/4 HP Router 2 Handle	445	239
7518	3-1/4 HP 5 speed Router	510	268
7539	3-1/4 HP Plunge Router	445	239
7399	5.6 amp Drywall Cutout Unit	140	84
7310	5.6 amp Laminate Trimmer	165	95
97310	Laminate Trimmer Kit comp	360	198
7335	5" Rndm Orbit Sndr w/ case	245	132
97355	7335 w/ case & dust pick-up	274	145
7336	6" Rndm Orbit Sander w/ case	250	137
97366	7336 w/ case & dust pick-up	284	149
73333	Dust Collection system	31	24.50
7539	3-1/4HP v/spd Plunge Router	510	275
9853	12V 3/8" Drill w/ keyless chuck	280	154
9855	12V 1/2" 2 spd,v/sp Drill w/cs.	335	188
8500	12V battery for above drills	Sale	45
332	Palm Grip Rndm Orbit Sander	120	69
333	above Sander with dust bag	135	75
334	333 Sander with PSA pad	135	74
340	1/4 Sheet Orb Sndr w/dust p/u	89	55
550	Pocket cutter with case	330	179
7700	10" "Lazerloc" Mitre Saw	634	339
310	Production Laminate Trimmer	250	145
347	7-1/4" "Framers" Circ Saw	225	129
347K	347 Saw w/ plastic case	250	134
743	347 Saw - left hand version	225	129
743K	743 Saw w/ plastic case	250	134
9743	743 Saw with case	255	139
9347	347 Saw with case	255	139
447	347 Saw with brake	225	134
843	447 Saw-left hand version	245	139
7800	Drywall Sander	585	329
7810	Wet/Dry Vac for above sander	455	259

FREE FREIGHT TO THE CONTINENTAL STATES ON EVERY ITEM • GIFT CERTIFICATES NOW AVAILABLE

FINISHING TOUCHES

IN SEARCH OF MOBY DICK

At *WOOD*® magazine, we expect readers to put a personal twist on published project plans. But we gasped in unison when the photo *right* arrived in the mail.

Reader Larry Crosby of Mosheim, Tennessee, sent an accompanying letter to explain the scene. "The article on Ron Mirable and the 'Lure of Wood' [*WOOD* magazine, October 1994] was very good and will be helpful to many," wrote Larry. "But back in the spring, my boy couldn't catch any fish, so he said that we should make lures to scare the fish out of the water. Here is what we came up with."

Larry and his 8-year-old son, Andrew, carved the 4'-long lure from basswood. Although the giant plug hasn't yet put fish on the table, Larry reports that an even larger lure is under way.

Andrew Crosby pauses to show off his new monster fishing lure designed to scare a trophy from the waters of Tennessee's Norris Lake.

WHAT'S REALLY BEHIND AUTUMN COLOR?

The colorful change of tree leaves from green to red, orange, and yellow each fall signals something far more significant than autumn's arrival. According to the National Arbor Day Foundation, the changing colors indicate that trees are preparing for winter. The vivid reds, for instance, occur when a pigment called *anthocyanin* develops as the leaves' food-processing function begins to shut down. As the flow of water and glucose slows, the tree's woody tissues transform it into starch, a form of energy that will sustain it through the winter. And starch won't freeze as temperatures drop, as would summer's watery sap mixture flowing in the tree.

What if your trees don't turn color? Don't worry, they're probably okay. The transformation can be altered by warm nights, above-normal soil fertility, or lots of moisture.

SHELLAC: A GIFT FROM THE INSECT WORLD

Before the advent of easier-to-apply lacquer in the 1920s, and later polyurethane, shellac was a popular finish for furniture, floors, and woodwork. But because shellac is non-toxic, dries fast, and has little odor, today's woodworkers might want to acquaint themselves with this old standby that comes from nature's insect world (see "In Search of the Perfect Finish" on *page 66*).

The "lac" in shellac stands for the tiny lac insect (*Laccifera lacca*) of India and Thailand. To protect its larvae, it secretes a waxy resin which natives collect from the twigs of trees. After the lac incrustations have been scraped off, crushed, screened, and cleaned, they're processed into flakes or powder. Mixed with a solvent, the flakes become the flowable finish called shellac, first introduced in the U. S. in 1849 by William Zinsser, founder of the company that still bears his name.

▲ **In India and Thailand, natives scrape secreted bug resin from collected twigs to obtain the raw material for shellac.**

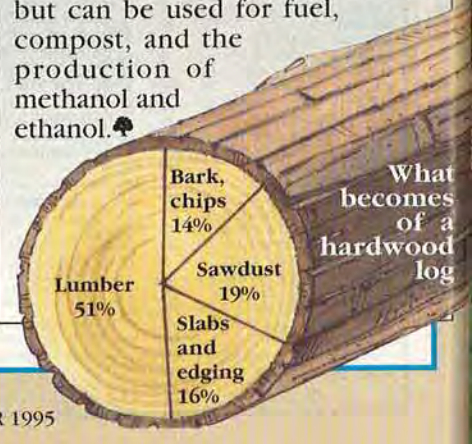
► **Much like pulling taffy, a native puller stretches molten shellac resin into large sheets that are later broken into small, thin flakes.**

Photographs: Larry Crosby; Wm. Zinsser & Co., Inc. Illustrations: Jim Stevenson

GETTING THE MOST OUT OF A LOG

When sawmills saw rectangular-shaped boards from nearly round logs, there's bound to be waste. Yet, this waste has value, points out the *Missouri Conservationist*, a publication of the Missouri Conservation Commission.

Here's what becomes of a typical red oak log: Bark becomes fuel and mulch. Chips are turned into particleboard and "reconstituted" wood products, such as molded toilet seats. Side slabs and edging end up as charcoal briquettes. Sawdust takes special handling, but can be used for fuel, compost, and the production of methanol and ethanol.



BIG TOOL PERFORMANCE. NOW IN A HANDY TAKE-HOME SIZE.

Sure, maybe someday you'll be working in a shop the size of a warehouse. No telling just where your woodworking might take you.

But keep in mind that success starts with a straight edge and a flat, uniform surface. And that most woodworkers have about enough room in their shop for themselves and a bench.

At Delta we figure you shouldn't be limited by the size of your shop. And that you deserve to surface stock with the same precision as the professional who's using one of our monsters.

Consider the new Delta 6" Variable Speed Bench Jointer–teamed up with our 12" Portable Planer. Professional precision on a benchtop budget.

Create a perfect edge or a smooth, uniform surface on stock up to 6" wide, on the jointer's 30" table. Tilt the fence to 45° for beveling and chamfering.

Then it's on to the planer for any thickness you like, (1/8" up to 6") on boards up to 12" wide. The two-knife cutterhead makes 16,000 cuts per minute, for perfectly smooth finishes. Four-post design (the only one of it's kind) adds stability and eliminates vibration. This is the most powerful planer in its class. A real workhorse of a machine.

Both units are hefty enough to take on some real woodworking–yet portable enough to be stowed away when not in use.

For the name of the nearest dealer, home center or hardware store carrying Delta tools, call Delta International Machinery Corp., 800-438-2486. In Canada, 519-836-2840.

THE POWER OF THE PROS

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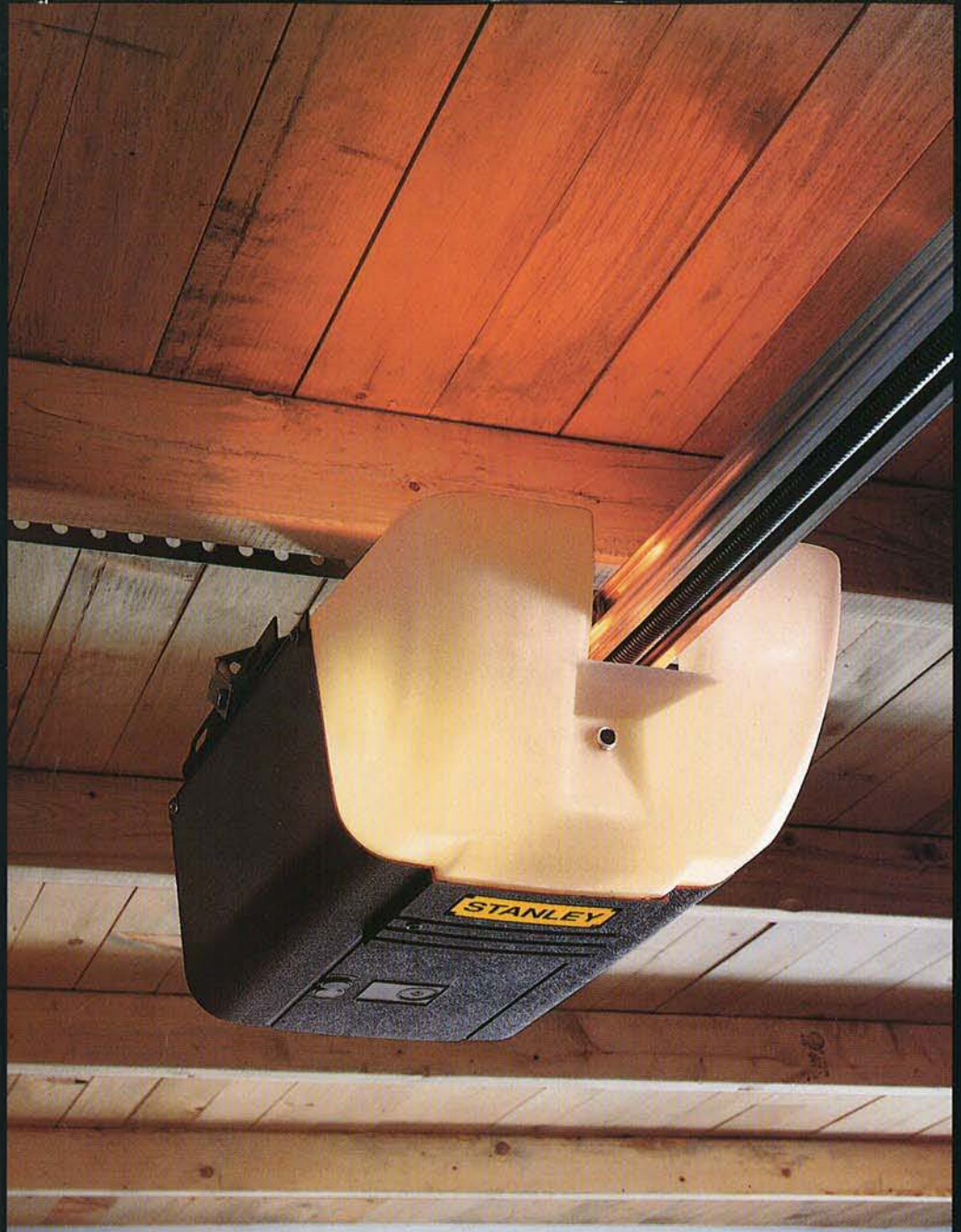
Delta funds these national PBS programs.

The New Yankee Workshop with Norm Abram.

The American Woodshop with Scott Phillips.



A self-lubricating screw drive.

Nylon bushings. Tested over 30,000 cycles.

Makes a great family heirloom.

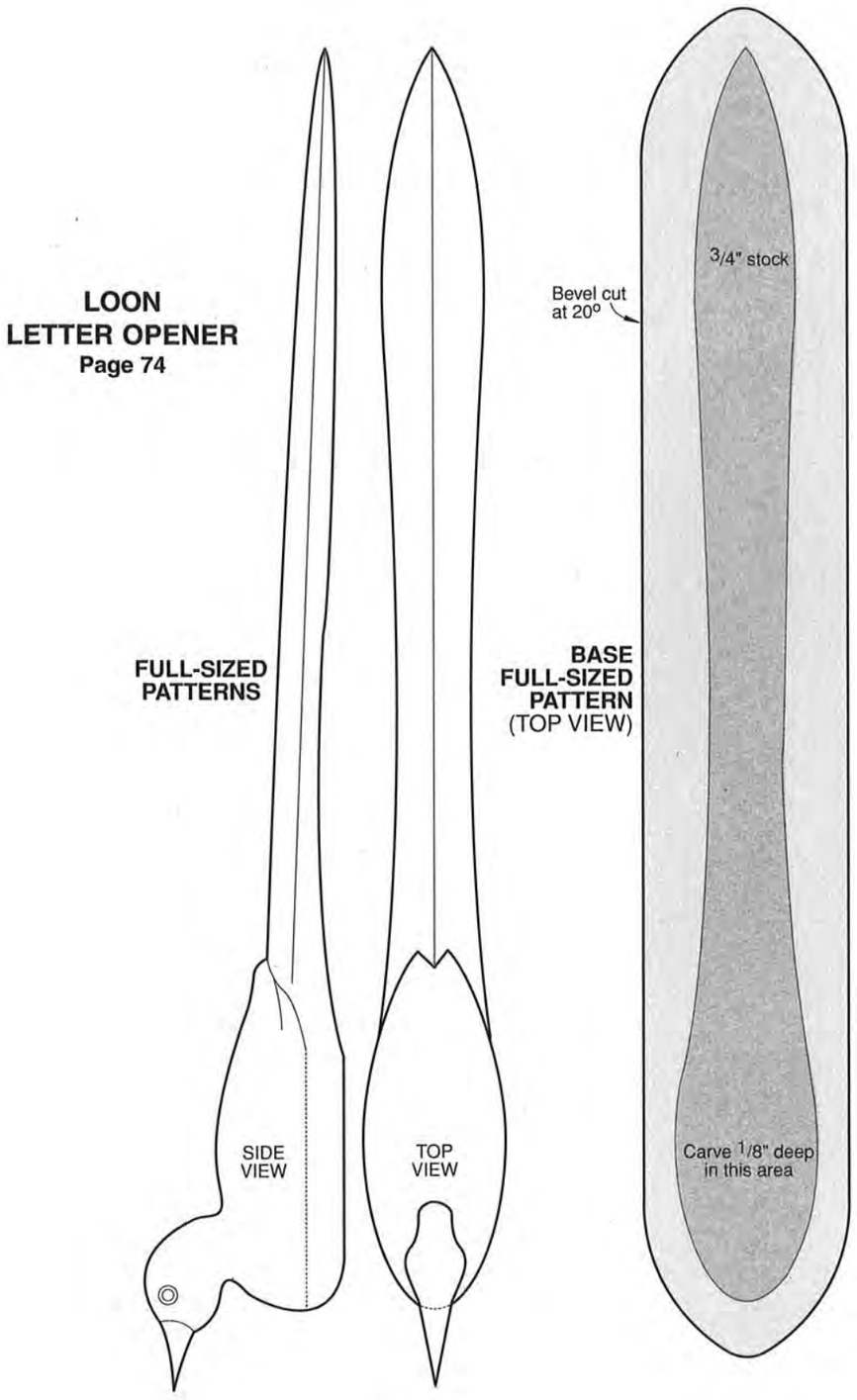
In tests, our screw drive garage door opener lasted the equivalent of 30 years. That's because its 18% larger screw dramatically reduces harmful wear. Its nylon bushings eliminate metal-on-metal fatigue.

And its self-lubricating design doesn't require a bit of messy

grease. That's a lot of thought for a garage door opener, we agree. Yet that's what led us to build a staple gun that won't jam and a fiberglass-jacketed hammer that resists breaking. And why the longevity of our products isn't measured merely in years, but in generations.

STANLEY
helps you do things right.®

As with any garage door opener, be sure to follow recommended safety maintenance. © 1995 The Stanley Works.



Better Homes and Gardens®

WOOD® PATTERNS™

Full-sized for your woodworking convenience

SEPTEMBER 1995 **ISSUE 81**

Dear Reader: As a service to you, we've included full-sized patterns on this insert for irregular-shaped and intricate project parts. You can machine all other project parts using the Bill of Materials and the drawings accompanying the project you're building.

- **Collector's coffee table**
- **Scrollsawed circus bow**
- **Whale bank**
- **Loon letter opener**

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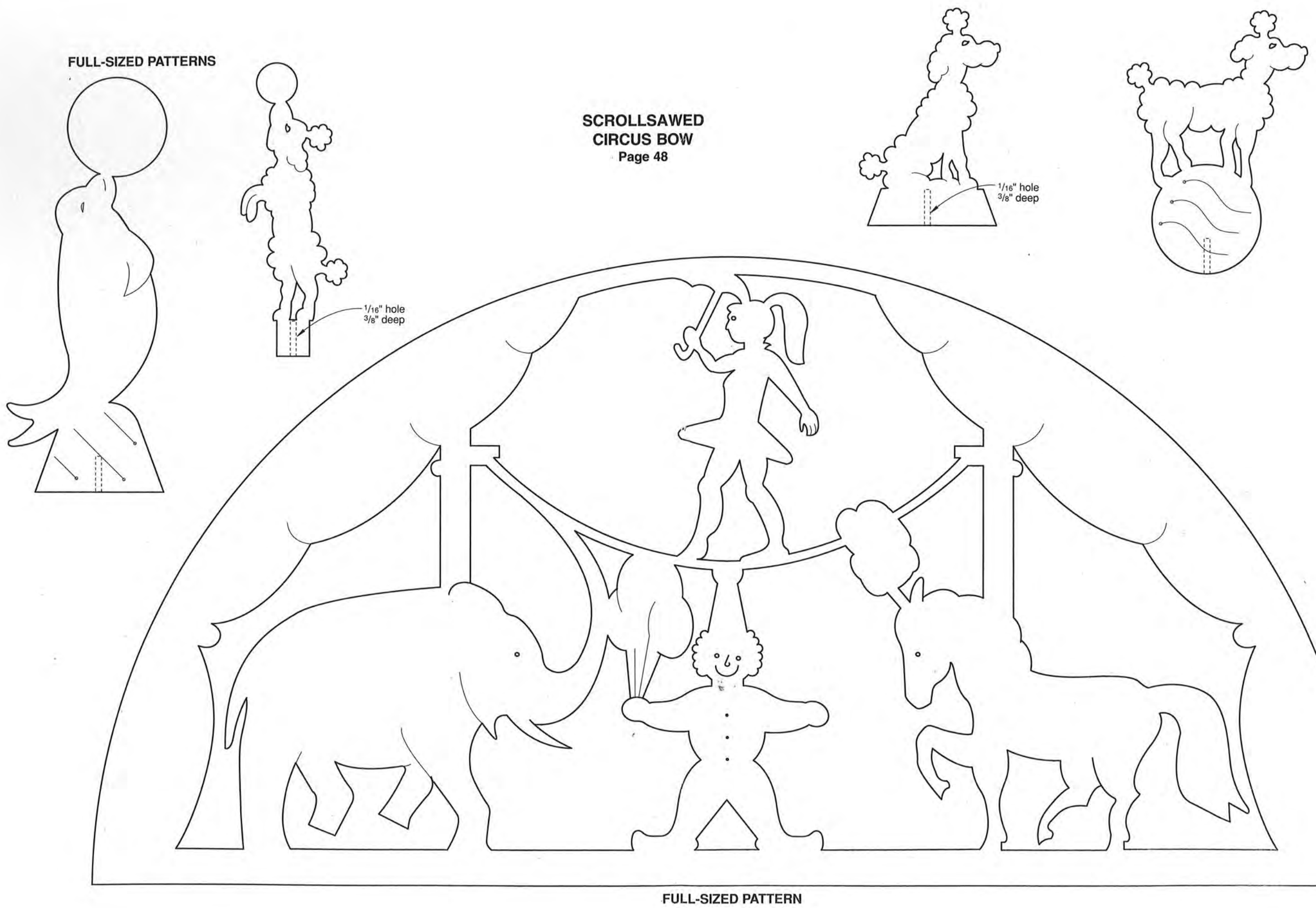
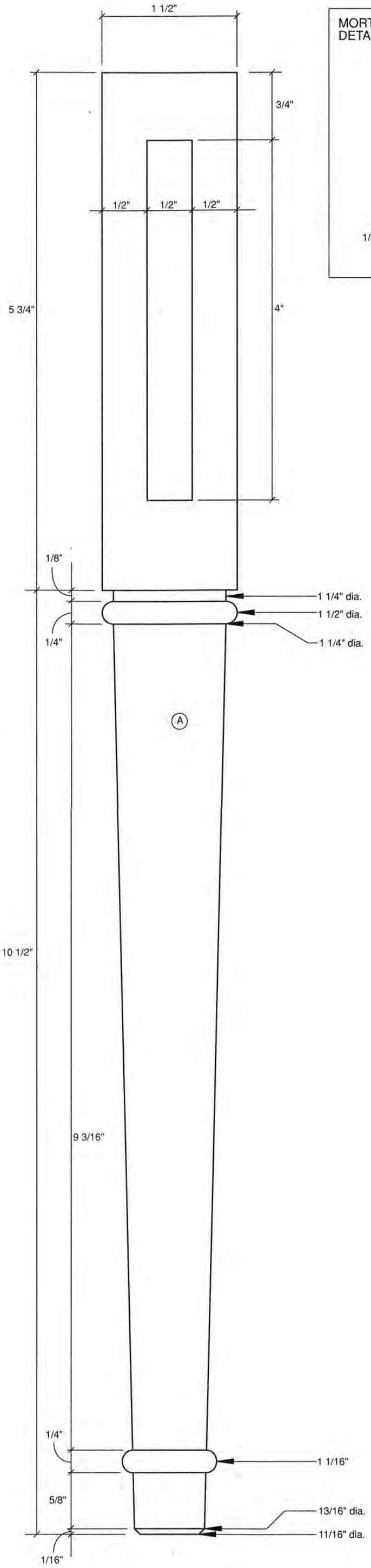


FULL-SIZED PATTERN



COLLECTOR'S COFFEE TABLE FULL-SIZED LEG PATTERN
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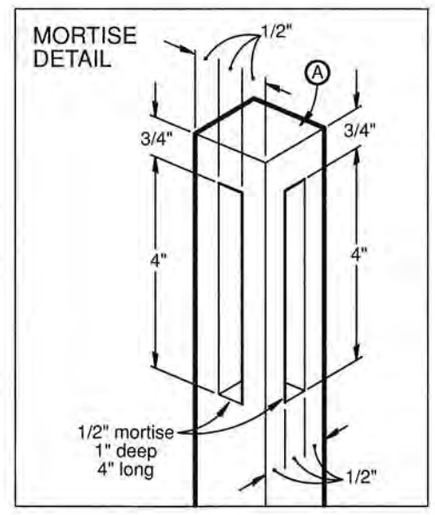
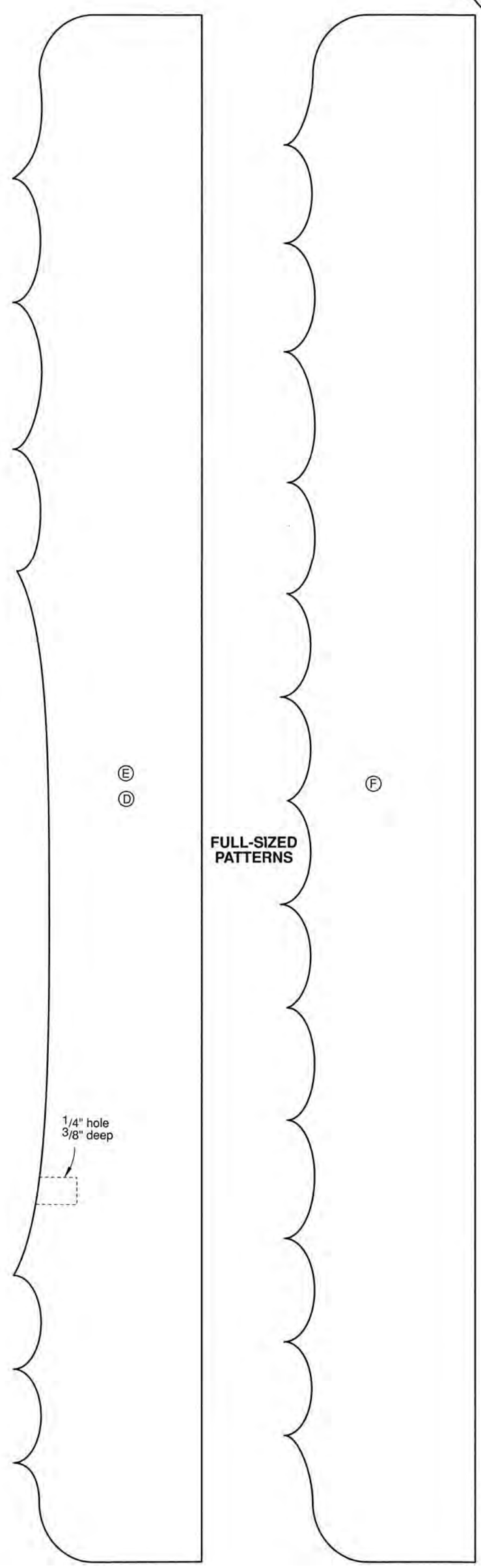
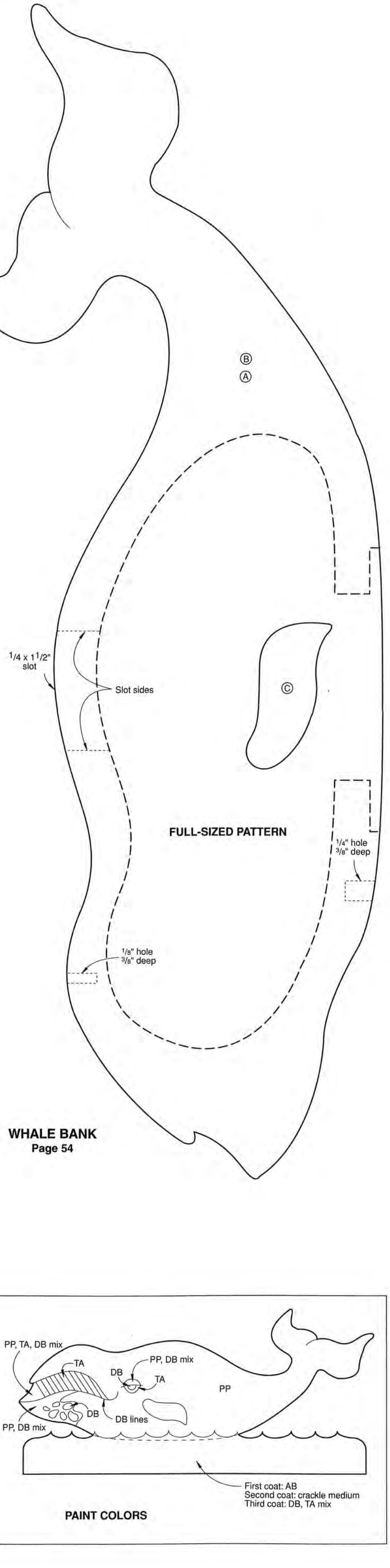




FULL-SIZED PATTERNS



WHALE BANK
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PAINT COLORS